ICONES PLEUROTHALLIDINARUM
XIII

SYSTEMATICS
OF
RESTREPIA
(ORCHIDACEAE)

Missouri Botanical Garden

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Carlyle A. Luer
in colaboration with
Rodrigo Escobar Restrepo

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Restrepia contorta (Ruiz & Pav.) Luer, Hacienda La Colonia near Popayán, alt. 1700 m, from the collection of Amalia Lehmann de Sarria in Popayán, flowered in cultivation at Colomborquídeas, photographed by Rodrigo Escobar, October 1993.

SYSTEMATICS OF THE GENUS *RESTREPIA* (ORCHIDACEAE)

ABSTRACT

A history of *Restrepia* H.B.K.* is given and the genus is described. A key to the subgenera, sections and species is given. Each species is described, illustrated with a black and white drawing, and provided with a distribution map. One or more four-color reproductions of most species are included.

New taxa:
Restrepia subgen. *Ecmeles* Luer, subgen. nov.
Restrepia subgen. *Pachymeles* (Garay) Luer, stat. et subgen. nov.
Restrepia contorta (Ruiz & Pav.) Luer, comb. nov.

In the first tome of *Nova Genera et Species Plantarum*, based on the collections and data from the expedition of Humboldt and Bonpland between 1799 and 1803, and published in 1816 by Humboldt, Bonpland and Kunth, the genus *Restrepia* is described. It is based on *R. antennifera*, collected late in 1801 near Pasto in the old department of Cauca in southern Colombia. It is clearly illustrated with a line drawing by Humboldt, and identical plants are locally abundant there today. The concise criteria set forth for the genus are still valid: "Calyx sub-bilabiate, patulous; lateral sepals connate; lip spurless, free, with two filiform processes at the base. Column wingless. Anther terminal, operculate. Pollen masses four, waxy. Habit of *Pleurothallis ruscifolia*." The synsepal of *R. antennifera* is described as being large, yellow and striped in red.

The first collection of a species of this genus was made by Ruiz & Pavón about 1779 in forested mountains near Muña in Huánuco in north central Peru. It was published by them in 1798 as *Humboldtia contorta*. It was transferred to *Stelis* by Persoon in 1807. In the *Orchids of Peru* Schweinfurth (1958) listed it as *Stelis contorta* with the note that it was an unidentified species of *Pleurothallis*. In his supplement of 1979, it was acknowledged as a species of *Restrepia*, but no transfer to *Restrepia* was made. Examinations of flowers of subsequent collections also made from near Muña, the type-locality, reveal medium-sized flowers with a spotted synsepal and a denticulate, subpandurate lip. It represents a frequent, widely distributed taxon that has been often identified as *R. maculata* Lindl.

Poeppig and Endlicher added the second species to the genus in 1835 from another Peruvian collection, but this species, *R. tentaculata*, was correctly transferred the following year by Lindley to *Pleurothallis*. In the same publication, the *Companion to the Botanical Magazine* in 1836, Lindley attributed to *Restrepia* a third species, *R. guttulata*, from a collection by Jameson near Quito, Ecuador, distinguishing it from *R. antennifera* by what he thought were larger flowers, a purple-spotted synsepal, and a lip "without filiform processes at the base." These minute processes were either missing or overlooked, and he surmised later in his treatment of *Restrepia* (Lindley, 1859) that *R. guttulata* might not be specifically distinct from *R. antennifera*.

*The abbreviation H.B.K. will be retained for the authorship of this genus and the type-species, not only because the species was found, collected and preserved by Humboldt and Bonpland, but because their voluminous descriptive notes and illustrations including the proposed name were made by them, then used by Kunth at their request in assembling the material for publication.

For the lack of a better genus, Lindley added *R. cucullata* as a fourth epithet in 1845. It would not be until 1918 that an appropriate genus (*Barbosella*) for the latter and its relatives would be proposed by Schlechter. Endres had suggested to Reichenbach a half-century earlier that his collection described as *R. prorepens* [= *Barbosella prorepens* (Rchb.f.) Schltr.] probably represented a new genus.

Again for the lack of a better genus, Lindley described *R. parvifolia* in 1846, but 13 years later he removed it to a new genus, *Brachionidium*. Also in 1846, Lindley added *R. maculata* from a collection by Linden near Bogotá, Colombia. *Restrepia maculata* also bears flowers with a large, purple-spotted synsepal, but Lindley distinguished it from the earlier *R. guttulata* by black-spotted sheaths of the ramicaul, a frequent character now known to occur in most species of the genus. *Restrepia maculata* is considered here to be a large variation of *R. contorta*, intermediate with *R. guttulata*.

In 1847, Karsten added *R. elegans*, a similar but smaller plant with smaller flowers from a Venezuelan collection. Over a century and a half ago, Lindley already suggested that it is little more than a dwarf form of his *R. maculata*. *Restrepia elegans* was soon followed by other descriptions in the genus by Reichenbach as well as other authors. Some would be transferred later to other genera such as *Barbosella* Schltr.

Ever since the second species was attributed to *Restrepia*, the genus has been in chaos. Lindley himself contributed to the confusion in his treatment of *Restrepia*. Apparently because of scanty or inadequately preserved material that was incorrectly interpreted, he, as well as other authors who followed, including Reichenbach, confused species. Reichenbach also contributed to the confusion when he published in *Xenia Orchidaceae* descriptions and illustrations of species different from the type-descriptions and type-specimens. These problems have contributed greatly to the present dilemma of sorting out the names of the "old" species. Also, not only are most of the flowers of types in pitiful condition, but some are absent from the sheets.

Some problems begin with confusions by collectors themselves. Too many times an early collector has grouped similar specimens from different localities under the same name or collection number. *Schlim 739* from the old department of Ocaña in Colombia consists of three different species. *Lehmann 6247*, also from Colombia and found in several, large herbaria, is a mixture of three different taxa with both large and small, and striped or spotted flowers. Lehmann is also known to have given his same number to different collections in order to complete sets for distribution or sale. In some herbaria old mixtures of collections, or cultivated plants without collection data, are sometimes mounted together on the same sheet.

The first treatment of the genus *Restrepia* was produced on three pages by Lindley in his *Folia Orchidacea* in 1859. He briefly described the eight known species attributed to the true *Restrepia* in two sections, and in a third section, the two nonconforming species that would be transferred later to *Barbosella* (Schlechter, 1918). Of the eight species of true *Restrepia*, Lindley identified the minute processes on the basal portion of the lip (the hypochile) in only two, *R. antennifera* and *R. elegans*, believing the processes absent in all the rest. However, in his treatment of *Pleurothallis* in *Folia Orchidacea* the same year, he described *P. nittiorhyncha*, an obvious species of *Restrepia*. His line drawing of the lip preserved on the type-sheet clearly shows the filiform processes on the hypochile.

The next treatment of the genus *Restrepia* was that of Schlechter in 1918, in which he erected the genus *Barbosella* entirely from 14 species already attributed to *Restrepia*. He briefly described in *Restrepia* three sections for the remaining 21 species. Unchallengingly accepting information gathered from preceding authors, he listed five of the species in section *Achaetochilus*, believing that these species did not possess the delicate labellar processes on the hypochile. These tiny processes are anatomical features now known to be present in all species of *Restrepia* (although modified in *R. aberrans*). In section *Eurestrepia* he listed 11 species known to have the labellar processes, and in section *Pleurothallopsis* he included those small-flowered species with very short peduncles as found in *R. muscifera*. No satisfactory treatment of the genus has been published since that time.

Since the first species described in 1816, over 100 epithets have been attributed to the genus including those in this work. Less than half that number remain in the genus. The other species previously attributed to *Restrepia* have been removed to *Barbosella* Schltr., *Barbrodria* Luer, *Brachionidium* Lindl., *Chamelophyton* Garay, *Dresslerella* Luer, *Pleurothallis* R.Br., *Restrepiella* Garay & Dunst., and *Restrepiopsis* Luer. The genus itself had been degraded to the synonymy of *Pleurothallis* by L. O. Williams (1940).

Present in the Reichenbach herbarium at W (Vienna) are several specimens accompanied by line drawings made around 1867 in Costa Rica by Endres, and sent to Reichenbach annotated as *Restrepia*. For unexplained reasons Reichenbach did nothing with most of the material. *Endres 9*, "Restrepia hirsuta," was finally described in 1923 by Schlechter as *Pleurothallis pilosissima* [=*Dresslerella pilosissima* (Schltr.) Luer]. *Endres 10*, "Restrepia sarcophylla," is *P. testifolia* (Sw.) Lindl., at that time unknown in Central America, and later described by Schlechter as *Cryptophoranthus pectinatus*. *Endres 271*, "Restrepia violacea," is a purple-flowered form of *Barbosella prorepens* (Rchb.f.) Schltr., the genus *Barbosella* not being proposed until 1918. It was *Endres 2618* that Reichenbach described as *Restrepia prorepens*, for which Endres had suggested a new genus. *Endres 4*, "Restrepia centereana," was described a half century later by Schlechter as *R. subserrata* (= *R. trichoglossa*). *Endres 39*, "Restrepia concinna," is one of the many variants of *R. muscifera*.

Other unpublished specimens at W annotated as *Restrepia* include "Restrepia klabochorum," a large-flowered form *R. antennifera*; "Restrepia sandersiana," a cultivated form of *R. antennifera*; and "Restrepia roezlii," a collection of *Pleurothallis lappiformis* Heller & L.O.Williams. A Colombian collection by Lehmann of *Barbosella cucullata* (Lindl.) Schltr. in several European herbaria is annotated in Kränzlin's handwriting "Restrepia cirrhopetaloides" as an intended name. Similarly, another Lehmann collection of *B. cucullata* was annotated "Restrepia isorhiza" by Kränzlin for a another proposed name.

The species of *Restrepia* are closely related and morphologically similar to each other, and they are easily recognized as belonging to the genus. No species intermediate between *Restrepia* and another genus is known, except possibly the presently described *R. aberrans*. Herbarium specimens of *Restrepia* are notoriously difficult to identify to species with accuracy. The same might also be said of many living specimens, cultivated or wild.

Several distinct species are easily identified without any ambiguity. However, many species are variable, even with intermediates between them and other species. When only individuals of the extremes are considered, "identification" is "easy," but as more and more collections are seen, identification becomes uncertain and increasingly difficult. A perplexing number of intermediate forms is eventually encountered with overlapping similarities and variabilities. There are no distinct morphological boundaries among some of the more frequent species, or species-complexes (e.g. *R. contorta* and *R. guttulata*). No two populations of these complexes have identical flowers.

Hundreds of plants with collection data cultivated by Colomborquídeas Ltda. near El Retiro, above Medellín, Colombia, have been examined, many plants repeatedly in an attempt to define the "old" species before "new" species can be recognized. One of the biggest problems has been the fact that flowers preserved in an alcoholic solution are rendered colorless, whereupon similar flowers become indistinguishable. For this reason I had discounted color as a major specific character for many years.

Morphology

All species of *Restrepia* are densely caespitose plants recognized by a well-developed ramicaul largely concealed by a series of more or less imbricating, distichous sheaths that become more or less inflated and laterally compressed above. The usually whitish sheaths, especially the lowermost, are frequently spotted or dotted in black, sometimes in transverse bars. The size of the habit is very variable in some species. Small growths with short ramicauls are not at all uncommonly found mixed with much larger, robust ramicauls and leaves. The production of "keikis," or the proliferation of another ramicaul from the apex of a ramicaul, occurs in practically all species albeit more frequently in some than in others.

The shape of the coriaceous leaf, usually elliptical or ovate, also varies considerably among various populations of some species, especially those of the *R. muscifera*-complex. The rigid, conduplicate leaf of *R. limbata* is distinctive. Only the thick, linear leaf of *R. chocoënsis* varies considerably from all the rest.

The short but distinct petiole of the leaf (except in *R. chocoënsis*) twists up to 180 degrees so that the rising peduncle finds its way up the back side of the leaf. The solitary, resupinate flower is borne by a slender, erect to arching peduncle produced laterally without an annulus from near the apex of the ramicaul (the leaf-stem abscission layer). The flower attains the resupinate position with the lip lowermost by a backward bending of the flower on the peduncle. No twisting of the ovary or pedicel occurs. The size of the flower seems constant in some species, but it is variable within other species. Unusually large or gigantic flowers occur in some populations, a phenomenon seen in some other pleurothallid genera (e.g. *Barbosella*, *Platystele* and *Pleurothallis*).

A tubular floral bract encloses the short pedicel, usually about the same length. Produced from near the adaxial end of the pedicel is a more or less elongated process, termed here the "filament" because it was called that by Ames. It is the vestigial remnant of the next flower-bud, present to some degree in most, if not all, single-flowered species or in the terminal flower of a raceme. It is not diagnostic. Ames and Schweinfurth noticed it on a specimen of a common species from

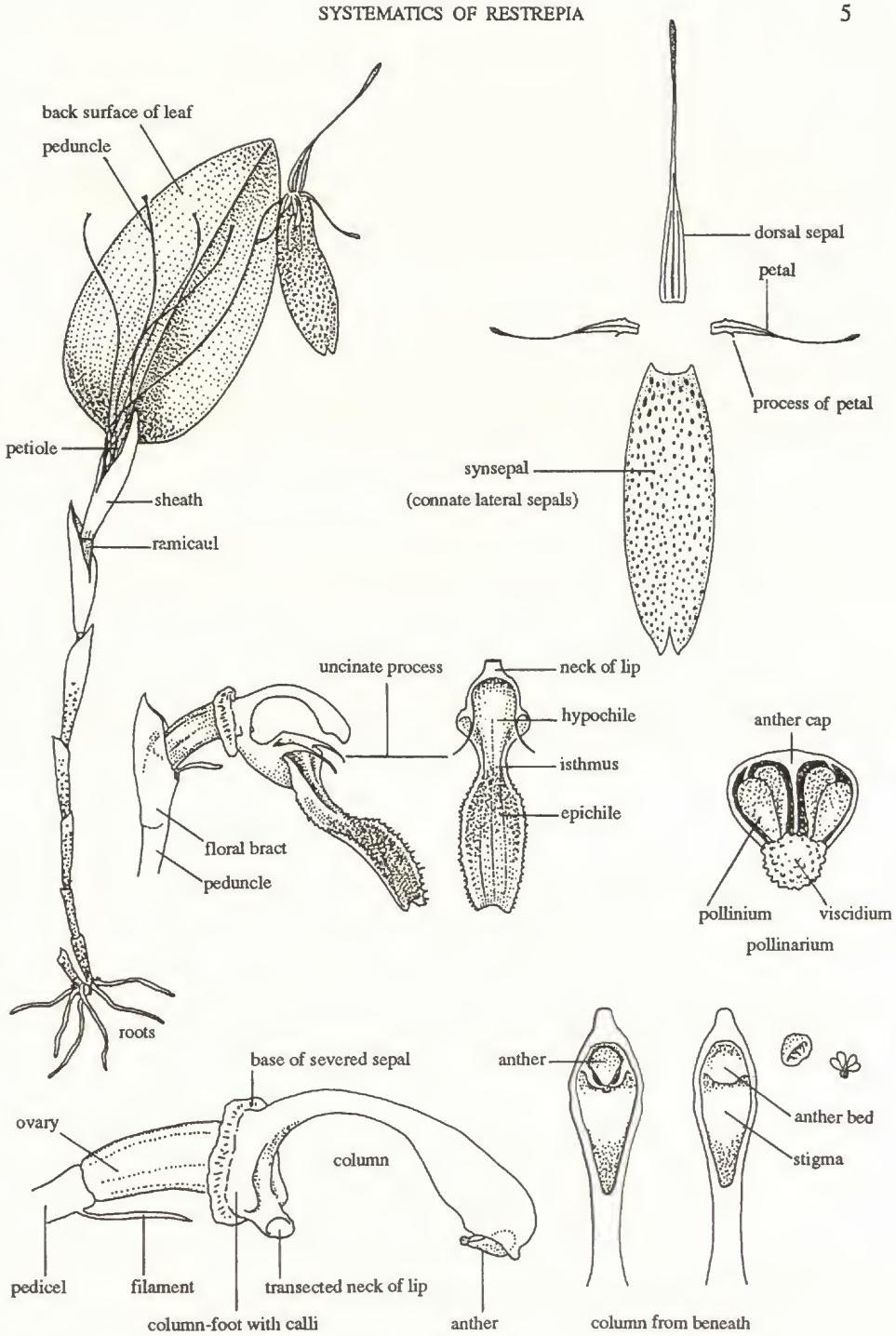

Figure 1. Morphology of vegetative and floral parts of *Restrepia*

Panama, known as *R. subserrata* in the Flora of Panama, and redescribed it as *R. filamentosa*. The term "filament" must not be confused with the slender, anther-bearing stalk of a non-orchidaceous flower.

The sepals are more or less membranous. The dorsal sepal is narrowly ovate, five-veined with the three central veins close and suffused into a common central stripe. Above, the sepal is attenuate and clavate at the apex (a character shared with some species of *Dresslerella, Dryadella* Luer, *Masdevallia* Ruiz & Pav., *Pleurothallis, Porroglossum* Schltr., *Scaphosepalum* Pfitz., and *Trisetella* Luer). Termed an osmophore, the details of the clavate apex have been described and illustrated with TEM photographs (transmission electron microscopy) (Pridgeon & Stern, 1983). The lateral sepals are connate into a more or less elliptic synsepal, concave at the base, but the lamina varies from being concave to convex above the base. The tips of the two lateral sepals sometimes split apart. Rarely, the synsepal abnormally splits completely. The lateral sepals are lightly adherent or free in *R. aberrans*, and normally free above the middle in *R. chocoënsis* and *R. schizosepala*. The length of the sepals varies from 10 millimeters to over five centimeters. Each is at least six-veined, the synsepal appearing 13- to 19-veined with the central line of connation. "Large-flowered" is defined by the synsepal exceeding three centimeters in length; "small-flowered" is defined by the synsepal being less than two centimeters long; and "intermediate-sized" refers to those with flowers between.

The color of the synsepal is the most conspicuous feature of all the species. The basic color of the synsepals varies from white, rose, purple, yellow, orange, or tan. The additional red, purple, or brown pigmentation varies in combinations of suffusion, stripes, minute dots, or large spots, either scattered or in rows. Both spots and stripes often coalesce. Stripes of the synsepals often break up into dots or spots toward the base or toward the apex. Several species (e.g. *R. chameleon, R. aristulifera* and *R. trichoglossa*) are characterized by random spots, spots in rows, and distinct stripes. Spots and stripes often occur simultaneously.

Consideration has been given to the possibility that in *Restrepia* color could be a significant specific, diagnostic character. How important a role, if any, does the color play in enticing a specific pollinator? Are the colors and color-patterns really attractions for or recognized by pollinators? Possibly so. Then the question of 'what do insects see' arises. In "black light" (ultraviolet), both striped and spotted synsepals of all species observed glow a solid, bright red-orange or vermilion. Nevertheless, the color and color-pattern of the synsepals of many taxa are so distinctive, that I have decided to place more emphasis on color than I had before. Assuming a greater importance of color simplifies some problems.

One dark night at Colomborquídeas, while returning some plants to their benches, I happened to glance into a flower of *R. antennifera* from directly in front. The only light was from a single source far behind me in the black of night. I was startled to see a pair of tiny "head-lights" looking back at me. They resembled the pair of glowing eyes of moths commonly seen around lights at night. Was this flower trying to deceive a moth into believing a fellow moth was lurking within? A closer examination reveals that this light is reflected from the polished, concave surfaces on both sides at the base of the synsepal adjacent to the calli at the base of the column-foot. All species examined reflect light in a similar manner. I am sure that a full moon at night would create such a phenomenon. Could these reflecting lights aid in enticing specific pollinators?

The petals are slender and clavate or antenna-like (a character shared with some species of *Dracula* Luer, *Dresslerella, Masdevallia, Myoxanthus* Poepp. & Endl., and *Pleurothallis*). The clavate apices of the dorsal sepal and petals have been assumed to function as osmophores (scent-producing glands). This subject has been dealt with in detail by Vogel (1962), and Pridgeon and Stern (1983). Only a faint scent is discernible in some species. The margins of the petals above the base are thin and translucent, sometimes minutely serrate, or they may bear one or a few microscopic, capillary processes. These processes may be prominent, absent, or appear randomly in some species.

The lip is constant in basic morphology in all the species except for remarkable modifications (or lack of modifications) in *R. aberrans*. The lip is commonly spotted, even in species with a striped synsepal. The lips of all species are more or less oblong, obscurely, or distinctly, divided into an anterior epichile and a basal hypochile. The epichile is usually longer and more or less flattened into an oblong blade. In many species it is narrowed near or below the middle to create a pandurate appearance. However, the narrowing can be caused or exaggerated by decurving of the margins so that it is more apparent than real. A pair of low calli extends onto the epichile from the sides of the hypochile. The margins and surface of the blade vary from glabrous to microscopically cellular to coarsely denticulate, or fimbriate, and from verrucose to papillose. The degree of development of these integumental processes is sometimes variable within a species. The hypochile is smooth and concave with a pair of slender, delicate, narrowly triangular, marginal process often with a hairlike termination. The base of the lip is inflexibly united by a thick, cylindrical neck to the pedestal-like column-foot.

The column is slender, more or less clavate, with the anther and stigma ventral. The anther cap is deciduous with four, free, equal-sized, ovoid pollinia in two pairs. The viscidium is variable in size. A rostellar flap separates the pollinia from the stigma on the undersurface of the column. A pair of rounded calli is present on the broad foot, one at either side of the base of the column. They are often yellow and conspicuous, which prompted Reichenbach to choose the name *xanthophthalma* for a Guatemalan species that flowered in cultivation. Sometimes these calli are pubescent. I have drawn them many dozens of times, and each time I wonder what, if any, the purpose of these strange features could be.

The ovary is smooth, lightly sulcate and, as in other pleurothallids, triloculate.

* * *

The center of distribution of the genus is in the high Andes of Colombia and Ecuador, or from Venezuela into Peru. One frequent species-complex, from which all others seem to emanate, dominates. This "mother" is the *R. contorta*-complex, characterized by a medium-sized flower with a spotted synsepal and a subpandurate lip with the epichile verrucose. Numerous named variations and cultivars are included, and with intermediates *R. contorta* grades into *R. guttulata*.

The question of how much variability to allow within a species always arises. If each combination of minor variations were recognized, a flood of unmanageable, new epithets would be required. The genus would become a far greater mass of confusion than it has been. Nevertheless, several reproducing populations with distinct or recognizable variations (e.g. *R. cuprea*) are acknowledged here at the specific level. Although some subtle sense of order has seemed to emerge, a signif-

icant percentage of intermediates prevents a decisive solution to many of the problems of identification.

The species of the Andes can be roughly grouped into those with "large" flowers related to the striped *R. antennifera* and the spotted *R. guttulata*; those with "intermediate-sized" flowers related to the striped *R. brachypus* and the spotted *R. contorta*; and those with "small" flowers related to the *R. trichoglossa*-complex.

Easily recognized is *R. antennifera*, the large-flowered species with a yellow synsepal thinly striped in red or brown, and a large, oblong lip with smooth or nearly smooth margins and surface. *Restrepia guttulata* is the large-flowered taxon with variable spots of purple or brown on a rose to yellow synsepal and a broad, oblong lip that is variably denticulate. *Restrepia brachypus* is the taxon with medium-sized to large flowers with a yellow synsepal thinly striped in purple or brown, similar to that of *R. antennifera*, but with a denticulate, verrucose, subpandurate lip. *Restrepia contorta* is the taxon with medium-sized flowers with a brown or purple-spotted synsepal and a verrucose, denticulate, subpandurate lip. Populations merge with *R. guttulata*. *Restrepia elegans* is a smaller-flowered taxon very similar to *R. contorta*. The most frequent of the small-flowered species is *R. trichoglossa* which occurs in numerous color-forms from spots to stripes.

As presently conceived, two complexes dominate Central America. The *R. muscifera*-complex consists of those familiar taxa with the variously spotted flowers with a large-clubbed dorsal sepal that are borne by short peduncles near the base of the back of the leaf. The *R. trichoglossa*-complex consists of those taxa with delicate, pale yellow to pale rose flowers more or less spotted or thinly striped in brown or red, and borne by peduncles about as long as the leaf. Although both complexes are variable within themselves, forms intermediate between them are unknown. Both complexes also intermingle in the adjacent Colombian Andes.

One of the most perplexing problems in the genus is the relationship of the Central American species commonly known as *R. subserrata*, and the Andean species described as *R. leontoglossa* and *R. trichoglossa*. Among them there are no great specific differences, and, except for color, no significant difference at all. The length of the sepals varies from 15 to 25 millimeters, and the basic color varies from yellow to rose, and they are variously spotted or striped with red, purple or brown. Some have both spots and stripes. The capillary processes near the base of the petals are too inconstant to be of value. The lip is slender, six to 11 millimeters long with a narrow blade commonly less than two millimeters wide, and with variously fringed margins. The oldest epithet is *R. trichoglossa*.

Within and about the periphery of the broad distributions of the above taxa, limited populations have evolved sufficiently with certain, more or less distinct combinations of minor characteristics which render them recognizable and probably specifically distinct. The following treatment is the best that can be offered at this time with only primitive, gross morphology and without too much guessing.

Species of the genus are found growing epiphytically in suitable, moist forests from southern Mexico to Bolivia, but uncommonly compared to many other genera of pleurothallids. The species usually occur in association with other orchids, especially pleurothallids. Usually only one, or occasionally two, species of *Restrepia* occur within a limited area. Of the 48 species recognized, 28 are found in Colombia, 15 in Ecuador, and 12 in Venezuela. Only one collection of a *Restrepia* was cited by Schweinfurth in the *Orchids of Peru*, and that one (*R. contorta*) was treated

in *Pleurothallis* as *P. fimbrilabia* C.Schweinf. Eight species are currently attributed to Peru, and only two are known from Bolivia. No species is known from the Antilles, the Guianas, or Brazil. The superficially similar *Pleurothallis hemirhoda* Lindl. has been described in the genus three times.

Nothing is known about the pollination in *Restrepia*. Spontaneous hybrids have occurred only very rarely among the thousands of plants cultivated under the same circumstances of outdoor cultivation where spontaneous hybrids of *Dracula* and *Masdevallia* abound (e.g. Colomborquídeas near Medellín, Colombia).

Regardless of the difficulties in the taxonomy, this easily grown genus with compararively large, colorful flowers is horticulturally desirable and immensely popular among hobbyists worldwide. The following general advice on cultivation, offered by Mr. & Mrs. H. Phillips Jesup, applies to equally well to all species of the genus.

> Cultivation of most species of the genus is relatively easy, and plants flower well. Although they tolerate a wide range of temperatures, the ideal temperature at night is between 50° and 65° Fahrenheit (between 10° and 18° Celsius), and during the day, between 60° and 80° Fahrenheit (between 16° and 26° Celsius). Higher or lower temperatures, if not prolonged, seem to pose no problem. There should be good circulation of air and a humidity between 60% and 80%. Plants grow best in bright light, but not direct sunlight. Most plants, however, will also grow well in subdued light.
>
> Plants grow very well in small plastic pots in any relatively fine, well-draining orchid-potting mixture. They should be watered sufficiently so that the roots are never completely dry. Plants also grow well when mounted tightly on slabs of tree-fern, cork bark, or sections of tree-branches, all the above with a pad of moss around the roots. Although plants are usually cultivated in a greenhouse, they can also be grown indoors on a window-sill on in a Wardian case. Additional moisture can be obtained by placing a water-filled tray of pebbles beneath the container.
>
> Apparently the pH of the water is not significant on either side of pH 7, but, of course, strongly acidic or strongly alkaline water will damage plants. Fertilization also is not a problem. Routine applications of the fertilizer used for other orchids seems satisfactory.
>
> All species, except *R. chocoënsis* and *R. aberrans*, propagate readily from cuttings, which permits rapid and wide dissemination of plants among growers without further collection of plants from the wild. The ramicaul is simply divided about three centimeters below the leaf and buried deeply in damp moss. An adventitious plantlet will usually develop from the node which otherwise would have produced a flower. After roots appear, the plantlet may be repotted, or left to grow in the moss. Flowering can be expected within a year.

Numerous divisions from plants cultivated by Ann Jesup are now present in many collections, not only in the United States, but in South America and Europe as well. For the convenience in identification the following most significant plants that bear "AJ" numbers are as follows:

R. antennifera 27, 69, 118, 142.
R. aristulifera 47, 63, 98.
R. brachypus 14, 46, 52, 62, 70, 77, 87, 109, 123.
R. chameleon 50, 56, 64, 82, 83, 85, 90, 91.
R. contorta 3, 49, 76, 80, 81, 92.
R. cuprea 48.
R. dodsonii 31, 39, 40.
R. echo 21.
R. elegans 1, 15, 43, 100.
R. ephippium 95.
R. falkenbergii 68.
R. flosculata 124.
R. guttulata 9, 10, 17, 18, 19, 26, 34, 51, 55, 71, 73, 86, 89, 93, 96, 99, 102, 104, 110, 121, 131, 137.
R. iris 122, 125, 126, 127, 128, 129.
R. jesupiana 16, 35.
R. lankesteri 8, 107.
R. lansbergii 7.
R. limbata 75.
R. muscifera 13, 22, 23, 36, 42, 101, 108.
R. nittiorhyncha 54, 72.
R. pelyx 12, 74.
R. roseola 4
R. sanguinea 33, 79, 88.
R. seketii 53.
R. teaguei 94.
R. trichoglossa 2, 5, 24, 25, 28, 30, 37, 38, 45, 57.
R. vasquezii 61.

Identifications in *Orchids of Venezuela, an Illustrated Field Guide* volume 3 are mostly incorrect. The following is a list of changes indicating how these species are presently viewed.

Page 884, as *Restrepia antennifera* is *Restrepia brachypus*.
Page 885, *Restrepia aristulifera* is correct.
Page 886, as *Restrepia aspasicensium* is *Restrepia elegans*.
Page 887, *Restrepia elegans* is correct.
Page 888, as *Restrepia erythroxantha* is *Restrepia jesupiana*
Page 889, as *Restrepia guttulata* is *Restrepia contorta*.
Page 890, as *Restrepia hemsleyana* is *Restrepia antennifera*.
Page 891, *Restrepia lansbergii* is correct.
Page 892, as *Restrepia nittiorhyncha* is *Restrepia wageneri*.
Page 893, as *Restrepia schlimii* is *Restrepia roseola*.
Page 894, as *Restrepia wageneri* is *Restrepia trichoglossa*
Dunsterville's notes at AMES for the last (*Dunsterville 763*) indicate that it was imported from Central America.

Identifications in the Orchidaceae, part 2, of the *Flora of Venezuela* follow:

Page 17, Fig. 190, *Restrepia elegans* is correct.
Page 19, Fig. 191, as *Restrepia erythroxantha* is *Restrepia jesupiana*.
Page 21, Fig. 192, as *Restrepia guttulata* is *Restrepia contorta*.
Page 22, Fig. 193A, *Restrepia lansbergii* is correct.
Page 22, Fig. 193B, *Restrepia wageneri* is correct.

Current identifications of photographs published in *Native Colombian Orchids*, volume 4:

Page 485, No. 547, *Restrepia cuprea*
Page 486, No. 548, *Restrepia contorta*
Page 486, No. 549, *Restrepia contorta*
Page 487, No. 550, *Restrepia chameleon*
Page 488, No. 551, *Restrepia antennifera*
Page 488, No. 552, *Restrepia falkenbergii*
Page 489, No. 553, *Restrepia pelyx*
Page 489, No. 554, *Restrepia citrina*
Page 489, No. 555, *Restrepia nittiorhyncha* (Syn.: *R. schlimii*)
Page 489, No. 556, *Restrepia chocoënsis*
Page 490, No. 557, *Restrepia echinata*
Page 491, No. 558, *Restrepia sanguinea*
Page 491, No. 559, *Restrepia limbata*
Page 491, No. 560, *Restrepia guttulata*
Page 492, No. 561, *Restrepia aristulifera*
Page 493, No. 562, *Restrepia muscifera*

Rapid Approximate Identifier

Restrepia	Country of origin*	Mature size of plant	Synsepal in mm.	Pattern of synsepal	Shape of lip	Remarks
aberrans	Pan	small	10	no pattern	trilobed, smooth	unique, rare
antennifera	Ecu, Col, Ven	large	30-50	stripes	large, oblong, smooth	ramicaul often prolific
aristulifera	Col, Ven	large	23-28	stripes-spots	subpandurate	peduncle short
aspasicensis	Col	small	10-12	stripes	oblong, verrucose	very small
brachypus	Ecu, Col, Ven, Bol	small, large	22-37	stripes	subpandurate, denticulate	common
chameleon	Col	large	24-38	stripes-spots	elliptical, smooth	stripes or spots
chocoënsis	Col	medium	39	spots	ovate, verrucose	unique, rare
chrysoglossa	Col	medium	20	stripes	ovate, thick, smooth	lip clear yellow-orange
citrina	Col	large	30	spots	subpandurate, smooth	synsepal lemon yellow
cloesii	Peru	medium	20	stripes	pandurate, smooth	like a small *R. falkenbergii*
condorensis	Ecu	small	30	spots	pandurate, fimbriate	synsepal acute
contorta	Peru, Ecu, Col, Ven	medium, large	25-35	spots	pandurate, verrucose	common
cuprea	Col	large	28-32	spots at base	oblong, verrucose	copper colored
cymbula	Ecu	small	15	spots	subpandurate, verrucose	synsepal cymbiform
dodsonii	Ecu	small	17-20	spots in rows	very narrow, fimbriate	like a red *R. trichoglossa*
echinata	Col, Peru	small	15-17	spots	obovate, thick, echinate	rare
echo	Col	medium	10-13	spots	ovate	peduncle short
elegans	Ven	small	18-25	spots	subpandurate, verrucose	like a small *R. contorta*
ephippium	Ecu	medium	26	spots	subpandurate, smooth	synsepal saddle-shaped
escobariana	Col	small	16-18	spots	oblong, verrucose	leaves conduplicate
falkenbergii	Col	large	21-26	stripes	pandurate, smooth	tallest species
flosculata	Ecu, Col	medium, large	13-15	spots-stripes	broadly oblong, smooth	peduncle short
guttulata	Peru, Ecu, Col, Ven	large	30-50	spots	large, oblong, verrucose	frequent
iris	Ecu	small	18	stripes-spots	oblong, small, smooth	flowers multicolored
jesupiana	Ven	medium	30	mostly spotless	oblong, smooth	synsepal yellow
lankesteri	CR	small	22-28	spots	oblong, fimbriate	like a large *R. trichoglossa*
lansbergii	Ven, Ecu, Peru	small	12-18	spots	oblong, nearly smooth	synsepal narrow at base
limbata	Col	medium	25	stripes	oblong, verrucose	leaves conduplicate peduncle short
mendozae	Ecu	medium	22	rare spot	oblong, subverrucose	peduncle short
metae	Col	medium	26	spots	oblong, subverrucose	eastern lowland
mohrii	Peru	medium	14-16	spots	cylindrical, smooth	sides of lip revolute
muscifera	Mex, CA, Col	medium	10-12	spots	oblong, verrucose	peduncle very short
nittiorhyncha	Col	small	12	spots-stripes	broadly ovate, smooth	synsepal concave, small
pandurata	Col	medium	25	spots	pandurate, verrucose	apex of lip transverse
pelyx	Col	medium	21-26	spots	oblong, verrucose	synsepal cymbiform
purpurea	Col	medium	22	stripes	oblong, denticulate	stripes bright purple
radulifera	Ven	medium	45	spots	narrow, spiculate	synsepal narrow
renzii	Ven	medium, large	15	spots	oblong, denticulate	small flower, large plant
roseola	Ven	small	18-22	tiny spots	oblong, convex	synsepal rose
sanguinea	Col	medium,large	25-30	spots-stripes	oblong, verrucose	synsepal blood red
schizosepala	Ecu	medium	25	spots	oblong, denticulate	lateral sepals semi-connate
seketii	Col	medium	25	spots	oblong, smooth	synsepal sigmoid, sides incurved
tabeae	Col	medium	22-25	spots	oblong, subverrucose	peduncle short
teaguei	Ecu	small	24	spots	oblong, smooth	synsepal acute
trichoglossa	Mex to Peru	small	15-20	spots-stripes	very narrow, fimbriate	frequent
tsubotae	Col	medium	22-35	spots	narrowly oblong, fimbriate	like a large *R. trichoglossa*
vasquezii	Bol	medium	23	spots	oblong, subverrucose	like a small *R. guttulata*
wageneri	Ven	small	15	stripes	oblong, subverrucose	like a small *R. brachypus*

* Mex = Mexico; CA = Central America; CR = Costa Rica; Pan = Panama; Col = Colombia; Ven = Venezuela; Ecu = Ecuador; Bol = Bolivia.

Restrepia H.B.K., Nov. Gen. & Sp. 1: 367, 1816.

Type: *Restrepia antennifera* H.B.K., Nov. Gen. & Sp. 1: 367, 1816.

Ety.: Named in honor of José Manuel Restrepo, born in Envigado, Antioquia, in 1782, historian and lawyer, whom Humboldt and Bonpland probably met as a student in 1801 in Bogotá. Restrepo was a great-granduncle of Rodrigo Escobar Restrepo.

Syn.: *Pleurothallis* R.Br. sect. *Restrepia* (H.B.K.) L.O.Williams, Bot. Mus. Leafl. 8: 143, 1940.

Syn.: *Pleurothallis* R.Br. series *Restrepiae* (H.B.K.) L.O.Williams, Ceiba 2: 89, 1965.

Plants perennial, small to large for the subtribe, weak to robust, epiphytic, caespitose, the rhizome very short between aerial stems (ramicauls); roots few to many, slender. **Ramicauls** ascending to erect, slender to stout, non-pseudobulbous, as long as or longer than the leaf, unifoliate, sometimes prolific, enclosed by a series of loose, thin, compressed, more or less imbricating, distichous sheaths, the sheaths often marked with blackish dots or transverse dashes, the inflorescence emerging laterally from the ramicaul without an annular ring (annulus) a short distance below the apex (the leaf-stem abscission layer). **Leaf** erect in relation to the ramicaul, thinly to thickly coriaceous, smooth, green or dark green, often suffused with purple, elliptical to ovate, rarely linear, the apex subacute to obtuse, rarely acute, shallowly notched with a mucro in the sinus, the base cuneate, rounded to subcordate, contracted into a more or less twisted petiole. **Inflorescence** a fascicle of successive, solitary flowers, borne along the back surface of the leaf; peduncle slender, very short to longer than the leaf; floral bract thin, tubular, appressed to the pedicel; pedicel stout, shorter than the floral bract, with a filament (vestigial remnant of the next flower); ovary smooth, trivalvate; **sepals** conspicuous, membranous, variously spotted or striped, the dorsal sepal free, more or less erect, smooth, narrowly triangular, attenuated above the middle with the apex clavate-thickened (except in *R. aberrans*), the lateral sepals connate to near the apex (except for *R. aberrans*) and expanded into a prominent synsepal, smooth to minutely pubescent, the acute to obtuse apex usually minutely bifid; **petals** membranous, narrowly linear-triangular, the thin margins smooth, serrulate, or minutely toothed near the base, attenuated above the middle with the apex clavate-thickened; **lip** oblong to pandurate, more or less discernibly divided into two portions, the epichile (the apical portion) oblong-ovate, sometimes constricted, smooth to verrucose or serrate, the apex obtuse, rounded, truncate to retuse, the hypochile (the basal portion) suborbicular-subquadrate, concave with thin, erect margins, each side with a minute, acute process (obtuse in *R. aberrans*), the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, non-flexible, cylindrical neck, or rod; **column** slender, semiterete, dilated above the middle, the anther, rostellum and stigma ventral, the pollinia 4 (2 pairs), yellow, pyriform to spherical, with a loose, granular viscidium, the base of the column developed into a pedestal-like column-foot with the apex of the ovary, with a pair of obtuse calli, one on either side of the attachment of the lip.

Three subgenera are recognized. Most species are closely allied in the subgenus *Restrepia* which is composed of *R. antennifera* and all its affiliates. The only two known species that deviate significantly from the masses are *R. aberrans* and *R. chocoënsis*, each isolated in a monotypic subgenus. Subgenus *Restrepia* is divided into two sections, distinguished by having longer, more or less flexible peduncles, or shorter, erect peduncles that bear the flower against the back of the leaf (section *Pleurothallopsis*).

Restrepia subgen. **Ecmeles** Luer, subgen. nov.

Type: *Restrepia aberrans* Luer

Ety.: From the Greek *ekmeles*, "dissonant, with different parts" referring to the exceptional morphology of the floral parts.

Sepalum dorsale nonclavatum, sepala lateralia libera, labellum lobis basalibus obtusis.

This monotypic subgenus is characterized by a non-clavate dorsal sepal, free lateral sepals and a lip with obtuse lobes of the hypochile.

Restrepia subgen. **Pachymeles** (Garay) Luer, stat. et subgen. nov.

Bas.: *Restrepia* sect. *Pachymeles* Garay, Orquideología 8: 181, 1973.

Type: *Restrepia chocoënsis* Garay, Orquideología 8: 181, 1973.

Ety.: From the Greek *pachymeles*, "thick extremities," referring to the thickened leaves, and the thickened apices of the lateral sepals.

This monotypic subgenus is characterized by the narrow, thickly coriaceous, sessile leaves, and the elongate, thickened, free apices of the lateral sepals.

Restrepia subgen. **Restrepia**

Type: *R. antennifera* H.B.K., Nov. Gen. & Sp. 1: 367, 1816.

Syn.: *Restrepia* sect. *Monophyllae* Lindl., Folia Orchidacea *Restrepia* 1, 1859.

Lectotype here designated: *R. antennifera* H.B.K.

Ety.: From the Greek *monophyllae* "unifoliate," referring to the solitary leaf as opposed to the multi-leaved, caespitose habit of the other section composed of two species of *Barbosella*. Lindley divided section *Monophyllae* into two unnamed categories by brief Latin diagnoses: *Labellum juxta basin utrinque cirrhosum*, referring to the hairlike appendages above the base of the lip, and *Labellum ecirrhosum*, indicating incorrectly that the lip lacked hair-like basal appendages.

Syn.: *Restrepia* sect. *Eurestrepia* Schltr., Repert. Spec. Nov. Regni Veg. 15: 264, 1918.

Lectotype here designated: *R. antennifera* H.B.K.

Ety.: The prefix *eu-*, "true," indicating the taxon that includes the type.

Syn.: *Restrepia* sect. *Achaetochilus* Schltr., Repert. Spec. Nov. Regni Veg. 15: 264, 1918.

Lectotype here designated: *R. guttulata* Lindl.

Ety.: From the Greek *achaetochilus*, "a lip without hairs," referring to a mistaken belief that the species lacked the labellar processes.

This subgenus contains all the species of the genus except for two exceptional species which have been segregated into monotypic subgenera. All the species of subgenus *Restrepia* are closely allied and basically similar. The subgenus is subdivided into two sections, based more or less on the direction and length of the peduncle.

Restrepia subgen. **Restrepia** sect. **Pleurothallopsis** Schltr., Repert. Spec. Nov. Regni Veg. 15: 264, 1918.

Ety.: Named for the similarity of the species to *Pleurothallis* R. Br.

Lectotype here designated: *Pleurothallis muscifera* Lindl. = *Restrepia muscifera* (Lindl.) Rchb.f. ex Lindl.

Syn.: *Restrepia* subgen. *Pleurothallopsis* (Schltr.) Mohr, Leafl. Schltr. Instit. 2: 7, 1996.

This section is recognized by short, erect peduncles (usually less than half the length of the leaf) that bear the flower against the backside of the base of the leaf. The habit and flowers are too similar to those of sect. *Restrepia* to be segregated at the subgeneric level.

Restrepia subgen. **Restrepia** sect. **Restrepia**

Type: *R. antennifera* H.B.K.

Syn.: *Restrepia* sect. *Schlimii* Mohr, Leafl. Schltr. Instit. 2: 16, 1996.

This section is characterized by an elongated, more or less flexible peduncle that bears the flower above the middle, near, or beyond the apex of the leaf.

EPITHETS PUBLISHED IN *RESTREPIA*
WITH LIST OF ILLUSTRATIONS

Restrepia aberrans Luer.....Plate 1.
Restrepia angustilabia Schltr. = **Restrepia trichoglossa**
Restrepia angustilabia subsp. *subserrata* (Schltr.) Mohr = **Restrepia trichoglossa**
Restrepia antennifera H.B.K..... Plates 2., 3.
Restrepia antennifera var. *angustifolia* Kraenzl. = **Barbosella cucullata** (Lindl.) Schltr.
Restrepia antennifera subsp. *erythroxantha* (Rchb.f.) Mohr = **Restrepia elegans**
Restrepia antennifera subsp. *hemsleyana* (Schltr.) Mohr = **Restrepia antennifera**
Restrepia antennifera subsp. *klabochorum* Mohr = **Restrepia antennifera**
Restrepia antennifera subsp. *leontoglossa* (Schltr.) Mohr = **Restrepia trichoglossa**
Restrepia antennifera subsp. *striata* (Rolfe) Mohr = **Restrepia brachypus**
Restrepia antioquiensis Schltr. = **Restrepia sanguinea**
Restrepia apiculata Luer = **Restrepia contorta**
Restrepia aristulifera Garay & Dunst. .....Plate 4.
Restrepia aspasicensis Rchb.f. as *aspasicensium*.....Plate 5.
Restrepia australis Cogn. = **Barbosella australis** (Cogn.) Schltr.
Restrepia biflora Regel = **Pleurothallis hemirhoda** Lindl.
Restrepia brachypus Rchb.f.....Plates 6., 7.
Restrepia brachypus subsp. *serrilabia* (Schltr.) Mohr = **Restrepia trichoglossa**
Restrepia caespitifica Lehm. & Kraenzl. = **Barbosella prorepens** (Rchb.f.) Schltr.
Restrepia caucana Schltr. = **Restrepia contorta**
Restrepia chameleon Luer & Escobar .....Plate 8.
Restrepia chocoënsis Garay.....Plate 9.
Restrepia chrysoglossa Luer & Escobar.....Plate 10.
Restrepia citrina Luer & Escobar.....Plate 11.
Restrepia cloesii Luer.....Plate 12.
Restrepia cogniauxiana Speg. & Kraenzl. = **Barbosella cogniauxiana** (Speg. & Kraenzl.) Schltr.
Restrepia condorensis Luer & Escobar .....Plate 13.
Restrepia contorta (Ruiz & Pav.) Luer.....Plates 14., 15., 16., 17., 18.
Restrepia crassifolia Edwall = **Barbosella crassifolia** (Edwall) Schltr.
Restrepia cucullata Lindl. = **Barbosella cucullata** (Lindl.) Schltr.
Restrepia cuprea Luer & Escobar .....Plate 19.
Restrepia cymbula Luer & Escobar.....Plate 20.
Restrepia dayana Rchb.f. = **Restrepia muscifera**
Restrepia dentata Rolfe = **Restrepia aspasicensis**
Restrepia dodsonii Luer.....Plate 21.
Restrepia dusenii Sampaio = **Barbosella dusenii** (Sampaio) Schltr.
Restrepia echinata Luer & Escobar.....Plate 22.
Restrepia echo Luer & Escobar .....Plate 23.
Restrepia ecuadorensis Rolfe = **Restrepia contorta**
Restrepia elegans H.Karst.....Plates 24., 25.
Restrepia ephippium Luer.....Plate 26.
Restrepia erythroxantha Rchb.f. = **Restrepia elegans**
Restrepia escobariana Luer.....Plate 27.
Restrepia falkenbergii Rchb.f. .....Plate 28.

Restrepia filamentosa Ames & C.Schweinf. = **Restrepia trichoglossa**
Restrepia flosculata Luer.....Plate 29.
Restrepia flosculata var. *pallens* Mohr & Herzum = **Restrepia flosculata**
Restrepia flosculata var. *picta* Mohr & Herzum = **Restrepia flosculata**
Restrepia flosculata subsp. *picta* (Mohr & Herzum) Mohr = **Restrepia flosculata**
Restrepia gardneri (Lindl.) Benth. = **Barbosella gardneri** (Lindl.) Schltr.
Restrepia guttulata Lindl. .....Plates 30., 31., 32., 33.
Restrepia hemsleyana Schltr. = **Restrepia antennifera**
Restrepia hypolepta (Lindl.) Rchb.f. = **Pinelianthe hypolepta** (Lindl.) Rauschert
Restrepia iris Luer.....Plate 34.
Restrepia jesupiana Luer .....Plate 35.
Restrepia kegelii Rchb.f. = **Chamaelophyton kegelii** (Rchb.f.) Garay
Restrepia lankesteri Ames & C.Schweinf.....Plate 36.
Restrepia lansbergii Rchb.f. & Wagener.....Plate 37., 38.
Restrepia lansbergii var. *wageneri* Eaton = **Restrepia wageneri**
Restrepia lansbergii sensu Hook. = **Restrepia muscifera**
Restrepia lehmanniana (Kraenzl.) Schltr. = **Homalopetalum lehmanniana** (Kraenzl.) Schltr
Restrepia leontoglossa Schltr = **Restrepia trichoglossa**
Restrepia leopardina hort. ex Orchid Review = **Restrepia elegans**
Restrepia leopardina var. *rosea* hort. ex Orchid Review = **Restrepia elegans**
Restrepia liebmanniana Kraenzl. = **Pleurothallis spectrilinguis** Rchb.f.
Restrepia limbata Luer & Escobar.....Plate 39.
Restrepia loefgrenii Cogn. = **Barbosella australis** (Cogn.) Schltr.
Restrepia lonchophylla Barb. Rodr. = **Myoxanthus lonchophyllus** (Barb.Rodr.) Luer
Restrepia maculata Lindl. = **Restrepia contorta**
Restrepia maculata subsp. *ecuadorensis* (Rolfe) Mohr = **Restrepia contorta**
Restrepia maculata subsp. *robledorum* (Braas) Mohr = **Restrepia guttulata**
Restrepia mendozae Luer.....Plate 40.
Restrepia metae Luer .....Plate 41.
Restrepia microphylla Barb. Rodr. = **Barbosella gardneri** (Lindl.) Schltr.
Restrepia miersii (Lindl.) Rchb.f. = **Barbrodria miersii** (Lindl.) Luer
Restrepia mohrii Braem .....Plate 42.
Restrepia muscifera (Lindl.) Rchb.f. ex Lindl.....Plates 43., 44., 45.
Restrepia muscifera subsp. *shuttleworthii* (Rolfe) Mohr = **Restrepia muscifera**
Restrepia nittiorhyncha (Lindl.) Garay .....Plate 46.
Restrepia nuda Kl. = **Pleurothallis hemirhoda** Lindl.
Restrepia ophiocephala (Lindl.) Rchb.f. = **Restrepiella ophiocephala** (Lindl.) Garay & Dunst.
Restrepia pandurata Rchb.f.....Plate 47.
Restrepia pardina Lem. = **Restrepia contorta**
Restrepia parvifolia Lindl. = **Brachionidium parvifolium** (Lindl.) Lindl.
Restrepia pelyx Luer & Escobar.....Plate 48.
Restrepia pilossissima (Schltr.) Ames & C.Schweinf. = **Dresslerella pilosissima** (Schltr.) Luer
Restrepia pleurothalloides Cogn. = **Pleurothallis pleurothalloides** (Cogn.) Handro
Restrepia porschii Kraenzl. = **Barbosella cogniauxiana** (Speg. & Kraenzl.) Schltr.
Restrepia powellii Schltr. = **Restrepia muscifera**

Restrepia prorepens Rchb.f. = **Barbosella prorepens** (Rchb.f.) Schltr.
Restrepia pulchella Mohr = **Restrepia iris**
Restrepia punctulata Lindl. *nomen nudum* = ?**Restrepia elegans**
Restrepia purpurea Luer & Escobar.....Plate 49.
Restrepia radulifera Luer & Escobar.....Plate 50.
Restrepia reichenbachiana Endres = **Restrepiopsis reichenbachiana** (Endres) Luer
Restrepia renzii Luer.....Plate 51.
Restrepia rhynchantha Rchb.f. & Warsc. = **Barbosella cucullata** (Lindl.) Schltr.
Restrepia robledorum Braas & Braem = **Restrepia guttulata**
Restrepia roseola Luer & Escobar.....Plate 52.
Restrepia sanguinea Rolfe.....Plate 53.
Restrepia schizosepala Luer & Hirtz.....Plate 54.
Restrepia schlimii Rchb.f. = **Restrepia nittiorhyncha**
Restrepia seketii Luer & Escobar.....Plate 55.
Restrepia serrilabia Schltr. = **Restrepia trichoglossa**
Restrepia shuttleworthii Rolfe = **Restrepia muscifera**
Restrepia striata Rolfe = **Restrepia brachypus**
Restrepia subserrata Schltr. = **Restrepia trichoglossa**
Restrepia tabeae Mohr.....Plate 56.
Restrepia teaguei Luer.....Plate 57.
Restrepia tentaculata Poepp. & Endl. = **Pleurothallis tentaculata** (Poepp. & Endl.) Lindl.
Restrepia tolimensis Kraenzl. *nomen nudum* = **Barbosella prorepens** (Rchb.f.) Schltr.
Restrepia tonduzii Schltr. = **Restrepia muscifera**
Restrepia trichoglossa F.Lehm. ex Sander.....Plates 58. 59, 60.
Restrepia trichoglottis hort. ex Gentil, *sphalm.* = **Restrepia trichoglossa**
Restrepia tsubotae Luer & Escobar.....Plate 61.
Restrepia ujarensis Rchb.f. = **Restrepiopsis ujarensis** (Rchb.f.) Luer
Restrepia varicosa Lindl. = **Barbosella cucullata** (Lindl.) Schltr.
Restrepia vasquezii Luer.....Plate 62.
Restrepia vittata Lindl. = **Pleurothallis hemirhoda** Lindl.
Restrepia wageneri Rchb.f.....Plate 63.
Restrepia xanthophthalma Rchb.f. = **Restrepia muscifera**

LIST OF COLOR PHOTOGRAPHS

(The alphabetical order is altered to place photos in better positions for comparison.)

Frontispiece: *Restrepia contorta*, photo by Rodrigo Escobar

In Appendix:

Color Plate 1. *Restrepia antennifera*, photos by Rodrigo Escobar, upper left, upper right.
Restrepia aristulifera, photo by Rodrigo Escobar, lower left.
Restrepia aspasicensis, photo by Cordelia Head, lower right.

Color Plate 2. *Restrepia brachypus*, photos by Rodrigo Escobar, upper left, upper right, lower left.
Restrepia chocoënsis, photo by Rodrigo Escobar, lower right.

Color Plate 3. *Restrepia chameleon*, photos by Rodrigo Escobar, upper left, upper right.
Restrepia chrysoglossa, photo by Rodrigo Escobar, lower left.
Restrepia citrina, photo by Rodrigo Escobar, lower right.

Color Plate 4. *Restrepia contorta*, photos by Rodrigo Escobar, upper left, upper right, lower left, lower right.

Color Plate 5. *Restrepia condorensis*, photo by Rodrigo Escobar, upper left.
Restrepia cymbula, photo by Rodrigo Escobar, upper right.
Restrepia cuprea, photos by Rodrigo Escobar, lower left, lower right.

Color Plate 6. *Restrepia dodsonii*, photo by Rodrigo Escobar, upper left.
Restrepia echinata, photo by Rodrigo Escobar, upper right.
Restrepia echo, photo by Rodrigo Escobar, lower left.
Restrepia elegans, photo by Rodrigo Escobar, lower right.

Color Plate 7. *Restrepia ephippium*, photo by Walter Teague, upper left.
Restrepia escobariana, photo by Rodrigo Escobar, upper right.
Restrepia flosculata, photos by Alexander Hirtz, lower left, lower right.

Color Plate 8. *Restrepia guttulata*, photos by Rodrigo Escobar, upper left, upper right, lower left, lower right.

Color Plate 9. *Restrepia falkenbergii*, photo by Rodrigo Escobar, upper left.
Restrepia iris, photo by Ronald Parsons, upper right.
Restrepia jesupiana, photo by Rodrigo Escobar, lower left.
Restrepia lankesteri, photo by Rodrigo Escobar, lower right.

Color Plate 10. *Restrepia lansbergii*, photos by Rodrigo Escobar, upper left, upper right.
Restrepia limbata, photo by Rodrigo Escobar, lower left.
Restrepia mendozae, photo by Patrick Cloes, lower right.

Color Plate 11. *Restrepia muscifera*, photo by Ronald Parsons, upper left.
Restrepia muscifera, photos by Rodrigo Escobar, upper right, lower left, lower right.

Color Plate 12. *Restrepia mohrii*, photo by Johan Hermans, upper left.
Restrepia nittiorhyncha, photo by Rodrigo Escobar, upper right.
Restrepia pandurata, photo by Irene Bock, lower left.
Restrepia pelyx, photo by Rodrigo Escobar, lower right.

Color Plate 13. *Restrepia purpurea*, photo by Rodrigo Escobar, upper left.
Restrepia radulifera, photo by Rodrigo Escobar, upper right.
Restrepia roseola, photo by Rodrigo Escobar, lower left.
Restrepia schizosepala, photo by Alexander Hirtz, lower right.

Color Plate 14. *Restrepia sanguinea*, photos by Rodrigo Escobar, upper left, upper right.
Restrepia seketii, photo by Rodrigo Escobar, lower left.
Restrepia tabeae, photo by Rodrigo Escobar, lower right.

Color Plate 15. *Restrepia trichoglossa*, photos by Rodrigo Escobar, upper left, upper right, lower left, lower right.

Color Plate 16. *Restrepia teaguei*, photo by Rodrigo Escobar, upper left.
Restrepia tsubotae, photo by Rodrigo Escobar, upper right.
Restrepia vasquezii, photo by Rodrigo Escobar, lower left.
Restrepia wageneri, photo by George Schudel, lower right.

ACKNOWLEDGMENTS

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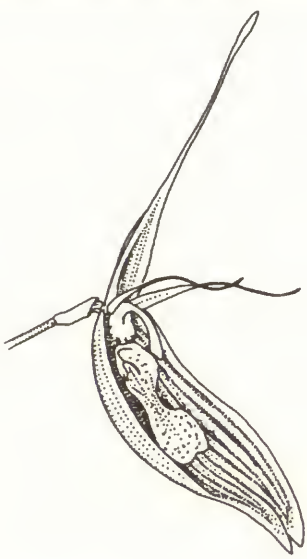


KEY TO THE SUBGENERA, SECTIONS AND SPECIES OF *RESTREPIA*

Subgenus *Pachymeles*

1 Leaves very thick, narrowly linear, sessile; lateral sepals with the apices free and thickened ..... *R. chocoënsis*

* * *

1' Leaves coriaceous, elliptical to ovate, petiolate; lateral sepals not with thickened apices 2

Subgenus *Ecmeles*

2 Dorsal sepal not clavate, lateral sepals free; lip with obtuse, marginal, basal lobes ..... *R. aberrans*

* * *

Subgenus *Restrepia*

2' Dorsal sepal clavate, lateral sepals connate (rarely semi-connate) into a synsepal; lip with acute, uncinate, basal processes 3

* * *

3 Peduncle more or less arching and flexible, half as long as, to longer than the leaf, bearing the flower more or less away from the leaf 10

Section *Pleurothallopsis*

3' Peduncle erect, much shorter than to about half as long as the leaf, bearing the flower along the back surface of the leaf 4

4 Peduncle short with the ovary arcuate, bearing the flower near the base of the leaf; synsepal 10-13 mm long, variously spotted 5

4' Peduncle short to about half as long as the leaf; synsepal more than 13 mm long, spotted or striped 6

5 Petals with proportionately large, conspicuous, clavate apices; lip more than half the length of the synsepal ..... *R. muscifera*

5' Petals minimally clavate; lip less than half the length of the synsepal ..... *R. echo*

6 Plant large with the sheaths of the ramicauls densely and darkly spotted; synsepals spotted above the middle, striped below the middle ..... *R. aristulifera*

6' Plant small to large with the sheaths not conspicuously spotted; synsepals spotted, unspotted or striped 7

7 Leaf narrowly ovate, acute, thickly rigid, subconduplicate; synsepal prominently striped with dark purple; lip dark purple with a pale margin ..... *R. limbata*

7' Leaf narrowly to broadly ovate, not rigidly subconduplicate; synsepals spotted or unspotted 8

8 Synsepal 13-14 mm long, with or without spots or stripes; lip broadly elliptical-obovate without an isthmus ..... *R. flosculata*
8' Synsepal more than 20 mm long; lip oblong 9

9 Synsepal spotted; petals with capillary processes on the margins above the base; lip about 7 mm long ..... *R. tabeae*
9' Synsepal yellow, unspotted; petals with serrulate margins above the base; lip about 11 mm long ..... *R. mendozae*

Section *Restrepia*
(synsepals striped)

10 Synsepal predominately striped (stripes occasionally breaking up into spots toward the apex or base) 11
10' Synsepal predominately spotted (spots occasionally arranged in rows) 24

11 Lip smooth to microscopically or minutely subverrucose 12
11' Lip variously verrucose and denticulate 19

12 Lip distinctly pandurate 13
12' Lip not distinctly pandurate 14

13 Ramicauls to 35 cm tall; epichile of the lip broader than the hypochile ..... *R. falkenbergii*
13' Ramicauls to 10 cm tall; epichile of the lip narrower than the hypochile ..... *R. cloesii*

14 Flower small, sepals 2 cm or less long 15
14' Flower large, sepals more than 3 cm long 18

15 Synsepal deeply concave; lip ovate, narrowed above the middle ..... *R. nittiorhyncha*
15' Synsepal not deeply concave; lip not narrowed above the middle 16

16 Plant large, more than 10 cm tall; lip elliptical, thick, orange, about 9 mm long ..... *R. chrysoglossa*
16' Plant small, less than 10 cm tall; lip oblong, about 6 mm long 17

17 Synsepal thinly striped, stripes disappearing toward the apex; lip less than 2 mm wide ..... *R. wageneri*
17' Synsepal boldly striped, stripes becoming dots at the apex; lip more than 2 mm wide ..... *R. iris*

18 Lip oblong with the hypochile reasonably well demarcated ..... *R. antennifera*
18' Lip broadly elliptical with the hypochile indistinctly demarcated ..... *R. chameleon*

19 Plant small, less than 10 cm tall; lip less than 2 mm wide 20
19' Plant large; more than 10 cm tall; lip more than 2 mm wide 21

20 Lip more than 5 mm long, narrow, fringed-verrucose.....*R. trichoglossa*
20' Lip less than 5 mm long, thick, verrucose, with basal processes extending forward beyond the middle.....*R. aspasicensis*

21 Synsepal heavily suffused, usually with stripes obscured.....22
21' Synsepal with thin stripes on a light background.....23

22 Synsepal heavily suffused with red-purple with a white margin above the base.....*R. sanguinea*
22' Synsepal heavily suffused with copper-color with marginal dots toward the base.....*R. cuprea*

23 Synsepal elliptical, yellow with thin, brown or purple stripes; lip narrow, width less than one-third of length.....*R. brachypus*
23' Synsepal obovate, white with broad, bright purple stripes; lip broad, width one-third of length.....*R. purpurea*

(synsepals spotted, flowers small)

24 Flower small, sepals less than 2 cm long.....25
24' Flower medium to large, sepals more than 2 cm long.....35

25 Synsepal cymbiform, concave to the apex, not just concave toward the base....26
25' Synsepal not cymbiform, not concave to the apex.....28

26 Lip tubular with the sides revolute.....*R. mohrii*
26' Lip not tubular with the sides revolute.....27

27 Lip ovate, nearly smooth, constricted above the middle.....*R. nittiorhyncha*
27' Lip narrowly subpandurate, verrucose.....*R. cymbula*

28 Lip 1-1.5 mm wide, denticulate, echinate.....29
28' Lip 2 mm or more wide, smooth, denticulate, or verrucose.....30

29 Synsepal purple with darker spots in rows.....*R. dodsonii*
29' Synsepal yellow or rose with scattered dots.....*R. trichoglossa*

30 Lip coarsely denticulate and verrucose.....31
30' Lip smooth or minutely verrucose.....32

31 Plant large, over 10 cm tall, leaves more than 2.5 cm wide, epichile oblong.....*R. renzii*
31' Plant small, less than 10 cm tall, leaves less than 2.5 cm wide, epichile dilated.....*R. echinata*

32 Synsepal pink, spotted with purple; lip with the blade longitudinally convex....33
32' Synsepal variously spotted; lip with the blade more or less flat.....34

33 Leaves thick, more or less conduplicate; synsepal with a few spots..... ..... *R. escobariana*
33' Leaves not as above; synsepal with minute dots in rows..... *R. roseola*

34 Synsepal usually 15-18 mm long, narrowed with erect margins toward the base, more or less dilated near or above the middle..... *R. lansbergii*
34' Synsepal usually 18-24 mm long, not significantly narrowed toward the base..... ..... *R. elegans*

* * *

35 Flower medium in size, sepals between 2 and 3 cm long.....36
35' Flower large, sepals more than 3 cm long.....52

(synsepals spotted, flowers medium-size)

36 Synsepal connate normally only to near the middle..... *R. schizosepala*
36' Synsepal connate to near the apex.....37

37 Synsepal cymbiform, deeply concave ..... *R. pelyx*
37' Synsepal not cymbiform and deeply concave.....38

38 Synsepal narrowly elliptical, acute 39
38' Synsepal elliptical, ovate, or obovate, subacute to obtuse.....40

39 Lip microscopically verrucose, ca. 7 mm long..... *R. teaguei*
39' Lip coarsely verrucose, denticulate; lip ca. 9 mm long..... *R. condorensis*

40 Lip coarsely denticulate and verrucose.....41
40' Lip smooth or minutely verrucose 45

41 Lip 1-1.5 mm wide, denticulate, echinate..... *R. tsubotae*
41' Lip 2 mm or more wide.....42

42 Synsepal heavily suffused with red-purple, with spots coalescing..... *R. sanguinea*
42' Synsepal with spots on a lighter background.....43

43 Synsepal whitish with small spots mostly below the middle..... *R. lankesteri*
43' Synsepal variously colored with random, small to large spots.....44

44 Synsepal with the blade more or less oblong above the isthmus..... *R. contorta*
44' Synsepal with the blade transversely oblong, broader than long..... *R. pandurata*

45 Plant small, less than 10 cm tall, leaves less than 2.5 cm wide.....46
45' Plant large, over 10 cm tall, leaves more than 2.5 cm wide.....47

46 Synsepal with minute dots in rows ..... *R. roseola*
46' Synsepal white to yellow, spotted with purple or brown..... *R. elegans*

47 Lip 4-5 mm broad without a constriction.....*R. chameleon*
47' Lip 2-4 mm broad with a slight or distinct constriction.....48

48 Synsepal with sides incurved below the middle, sigmoid in lateral view; lip glabrous, notched.....*R. seketii*
48' Not with the above features.....49

49 Synsepal with sides deflexed above the middle; lip longitudinally convex, clasping the center of the synsepal.....*R. ephippium*
49' Not with the above features.....50

50 Dorsal sepal and petals with the apices barely thickened.....*R. metae*
50' Dorsal sepal and petals with the apices clavate.....51

51 Plant tall with narrowly elliptical leaves; synsepal lemon yellow, spotted mostly below the middle.....*R. citrina*
51' Plant short with broadly ovate leaves; synsepal yellow with large, random spots .....*R. vasquezii*

(synsepals spotted, flowers large)

52 Synsepal spotted only on the margins above the base, or at the base, otherwise unspotted.....53
52' Synsepal diffusely spotted.....54

53 Synsepal spotted only on the margins above the base, otherwise unspotted, copper-colored.....*R. cuprea*
53' Synsepal spotted only below the middle, otherwise unspotted yellow .....*R. jesupiana*

54 Synsepal heavily suffused with red-purple, solid with large, confluent spots .....*R. sanguinea*
54' Synsepal not solid with confluent spots.....55

55 Lip broadly elliptical, glabrous, demarcation of hypochile obscure..*R. chameleon*
55' Lip minutely to coarsely verrucose.....56

56 Synsepal narrowly oblong; lip long, narrow, spiculate.....*R. radulifera*
56' Synsepal elliptical; lip oblong to subpandurate.....57

57 Lip oblong, or slightly narrowed below the middle.....*R. guttulata*
57' Lip narrowed below the middle.....*R. contorta*

Restrepia aberrans Luer, Orquideología 20: 117, 1996.

Ety.: From the Latin *aberrans*, "aberrant," referring to unusual floral features that occur in no other species of the genus.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 1.5-3.5 cm long, enclosed by 5-6 thin, whitish, loose, oblique, acute, compressed, more or less imbricating sheaths. **Leaf** erect, coriaceous, ovate, subacute, 2.5-3.5 cm long, 1.2-2 cm wide, the base cuneate or rounded, contracted into a twisted petiole 3 mm long. **Inflorescence** a solitary, light yellow, often cleistogamous flower, produced successively in a fascicle; peduncle slender, 2.5-3 cm long; floral bract thin, tubular, 3 mm long; pedicel 1.5 mm long, with a filament 1 mm long; ovary 1.5 mm long; **sepals** membranous, glabrous, not widespreading, the dorsal sepal free, narrowly linear-triangular, the apical third terete, 10 mm long, 1.25 mm wide at the base, 5-veined, the lateral sepals free, oblong, acute, 10 mm long, 1.5 mm wide, 5-veined; **petals** membranous, translucent, with a brown midvein, narrowly linear triangular, slightly thickened above the middle with the apex minimally clavate-thickened, 9 mm long, 0.75 mm wide at the base; **lip** yellow, oblong-trilobed, 3 mm long, 1 mm wide, 2 mm wide across the lateral lobes expanded, the middle lobe oblong, 3-veined, rounded at the apex, the lateral lobes erect, oblique, obtuse, below the middle, the disc with a pair of acute, erect calli just below the middle at the bases of the lateral lobes, continuing forward as low, longitudinal calli along a similar, midline callus that terminates at the apex, the hypochile broadly concave above the subtruncate base, connected to the column-foot by a short, thick, cylindrical neck; **column** slender, clavate, 2 mm long, the base pedestal-like. The four, ovoid pollinia are free.

PANAMA: Prov. of Bocas del Toro: epiphytic in forest above Chiriquí Grande, alt. 350 m, 17 Feb. 1985, collected by C. Luer, J. Luer, R. Dressler & K. Dressler, flowered in cultivation by A. & P. Jesup in Bristol, CT., 26 April 1987, *C. Luer 10612* (Holotype: MO).

Although vegetatively similar to the other small species of the genus, the floral parts of this species differ markedly from all the rest. The only plant known was discovered without flowers at a low altitude near the Atlantic coast of western Panama. The plant was cultivated by the Jesups where it produced flowers intermittently for five years during which time it was gradually declining in vigor before it died.

Apparently cleistogamous, the pale yellow floral parts barely open, frequently not at all before the ovary begins to enlarge. The dorsal sepal is narrowly linear and semiterete toward the apex, and not at all clavate. The lateral sepals are narrowly oblong, free and parallel. The slender petals are only barely thickened toward the apex. The lip is trilobed with erect, oblique, obtuse lobes just below the middle. Adjacent to them on the disc, the usual pair of calli are developed into acute, erect lamellae. The apical lobe is obtuse with three low, adjacent calli. The base is similar to that of other species of *Restrepia* except that the neck connecting the lip to the pedestal-like column-foot is unusually short and thick.

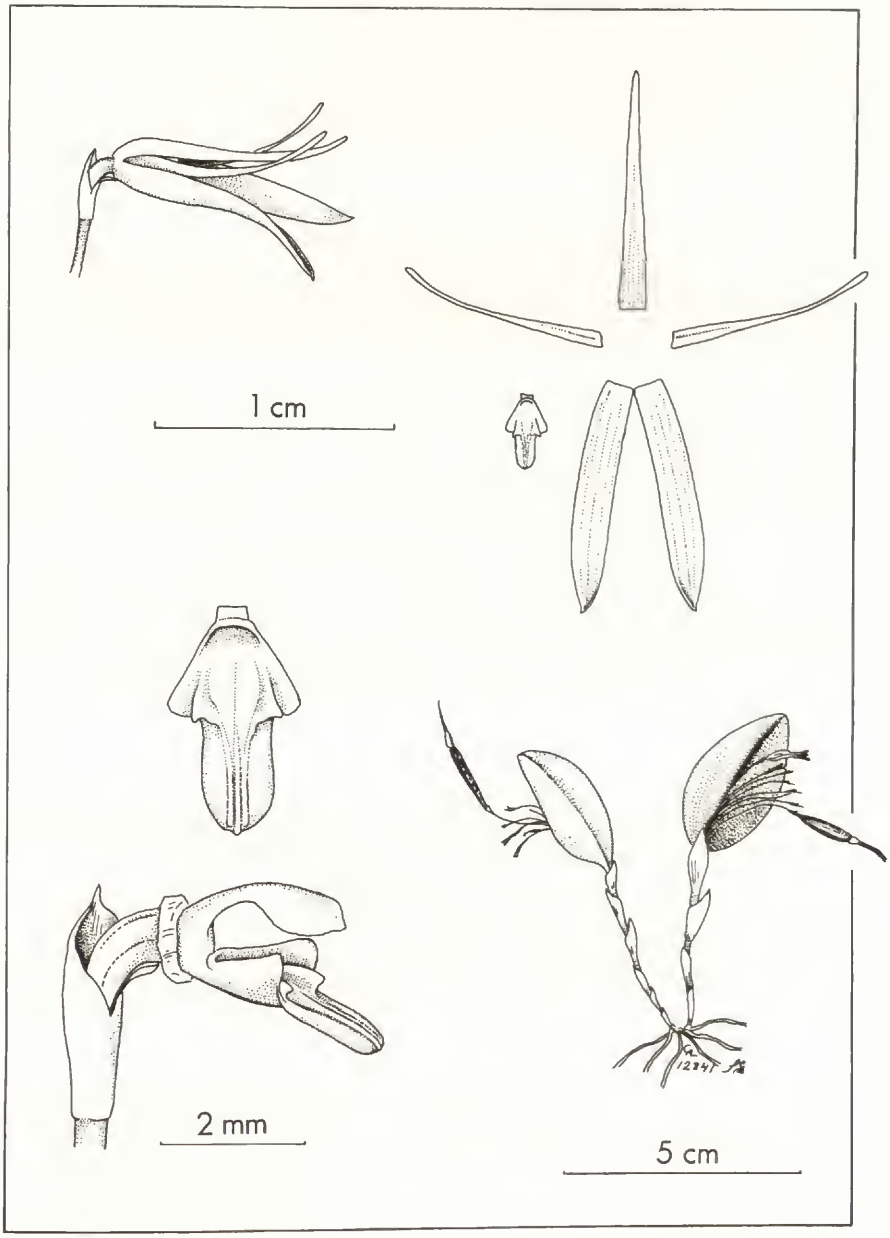


Plate 1. *Restrepia aberrans* Luer

Restrepia antennifera H.B.K., Nov. Gen. & Sp. 1: 367, 1816.

Ety.: From the Latin *antennifer*, "bearing antennae," referring to the appearance of the flower.

Syn.: *Restrepia hemsleyana* Schltr., Repert. Spec. Nov. Regni Veg. 15: 266, 1918.
Ety.: Named in honor of William Botting Hemsley, contemporary chronicler of orchids.

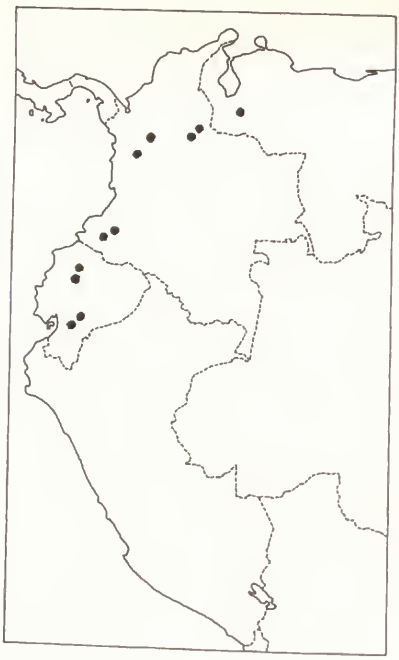
Syn.: *Pleurothallis ospinae* R.E.Schult., Caldasia 7: 354, 1957, non *P. antennifera* Lindl..
Ety.: Named in honor of Doña Bertha Hemandéz de Ospina of Bogotá, enthusiastic orchidophile.

Syn.: *Restrepia antennifera* subsp. *klabochorum* Mohr, Leafl. Schltr. Instit. 2: 11, 1996.
Ety.: Name suggested on a sheet at W of a large-flowered form of *R. antennifera* collected by the brothers Klaboch.

Syn.: *Restrepia antennifera* subsp. *hemsleyana* Mohr, Leafl. Schltr. Instit. 2: 13, 1996.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 8-23 cm long, often prolific, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less spotted or marked transversely with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, subacute, 4-10 cm long, 2-5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-9 cm long; floral bract thin, tubular, 6-10 mm long; pedicel stout, 5-7 mm long, with a short filament; ovary purple, lightly sulcate, 4-5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 30-50 mm long, 3-5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, white, yellow, or light purple, variously veined, dotted or spotted with brown or darker purple, 28-50 mm long, 10-15 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, veined and more or less suffused in purple, narrowly linear-triangular, the margins minutely serrulate, or with 1-2 minute, capillary appendages near the base, attenuated above the middle with the apex clavate-thickened, 18-30 mm long, 1-2 mm wide at the base; **lip** pale green, white, yellowish or light purple, variously suffused, flecked or dotted with red-brown or darker purple, oblong, 10-13 mm long, 3-5 mm wide, the epichile broadly oblong, sometimes obscurely or slightly narrowed in the lower third, microscopically to minutely verrucose with serrulate margins, the apex truncate-retuse, the hypochile suborbicular or subquadrate, concave with thin, erect margins, each side with a thin, attenuated, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 5-8 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Nariño (old dept. of Cauca): declivity of the Andes of Puraguay between Almaguer and Pasto, alt. 1480 hexap., Nov. 1801, *A. von Humboldt & A. Bonpland s.n.* (Holotype: P); same area, Morasurco, near Pasto, (**COLOR 1, UL**), alt. 2500 m, collected Feb. 1987 by R. Escobar et al., cultivated at Colomborquídeas, 6 Apr. 1988, *C. Luer 13056* (MO). Dept. of Cauca: forest around Hatofrio and Chiribio near Popayán, alt. 1700-2000 m, *F. C. Lehmann 6247 in part* (AMES, K); Volcán Tajumbina between La Cruz and El Tablón, alt. 2300-2500 m, July 1886, *F. C. Lehmann 6257* (K). Dept. of Norte de Santander (old dept. of Ocaña): Páramo de San Pedro, alt. 3500 m, 1851, *L. Schlim 730* (K); Ocaña, same area, alt. 3500 m, 1851, *L. Schlim 738, in part* (BR, K, W); colored illustration *Schlim 68* (K); Alto de San Francisco north of Villacaro, alt. 2850 m, 11 May 1984, *C. Luer, J. Luer, R. Escobar & E. Valencia 10275* (MO); same collection, flowered in cultivation by the Jesups in Bristol, CT, 13 Mar. 1994, *C. Luer 17136* (MO). Dept. of Antioquia: Urrao, Quebradona, (**COLOR 1, UR**), collected by M. Zapata, cultivated at Colomborquídeas, *R. Escobar s.n.* (JAUM); Abriaqui, Río Herradura, alt. 2200 m, 13 May 1983, *R. Escobar 2585* (SEL). Without collection data: imported by F. Sander, flowered in cultivation at Kew., 30 June 1903, illustrated in Bot. Mag. 7930, *Sander s.n.* (K, type of *R. hemsleyana*).



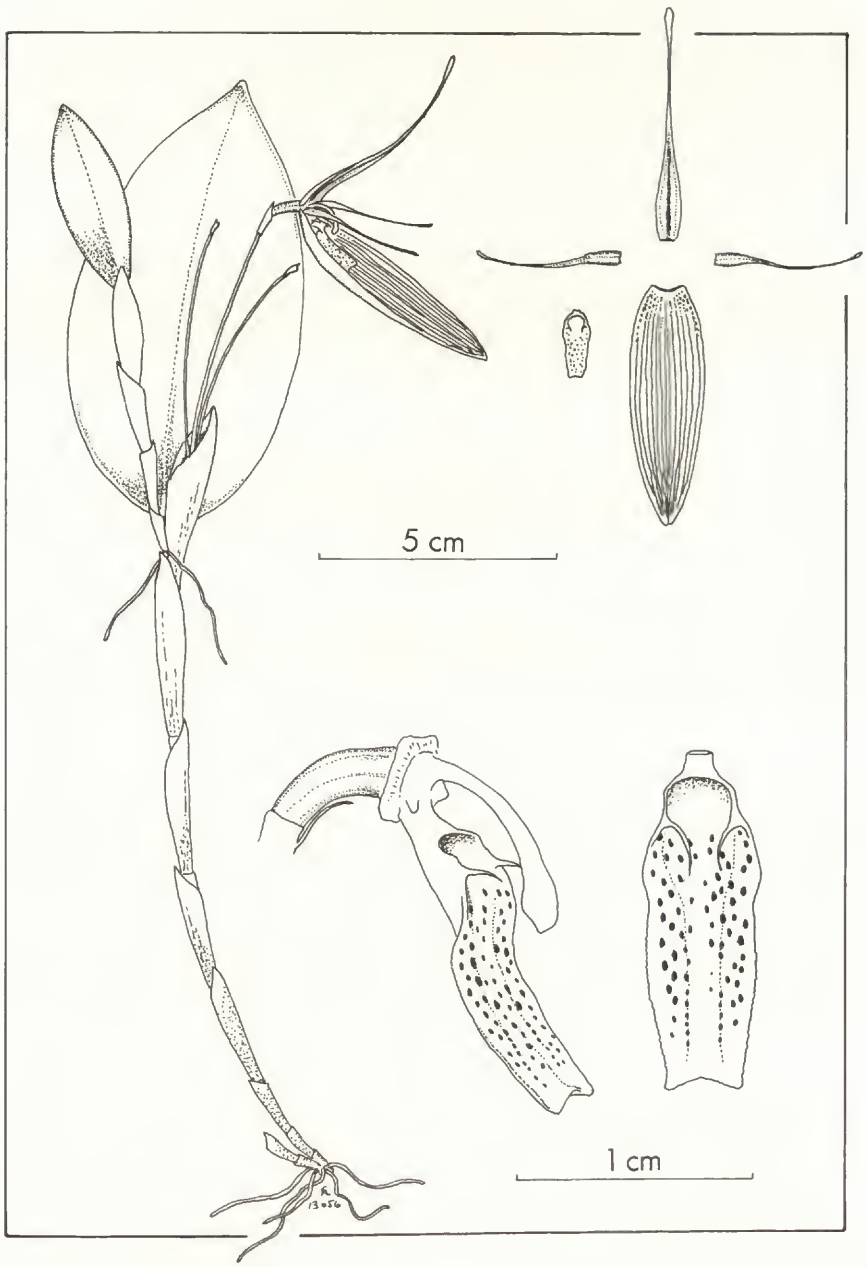


Plate 2. *Restrepia antennifera* H.B.K.
(Colombia)

VENEZUELA: Edo. Mérida: La Carbonera, alt. ca. 2000 m, May 1967, *G. C. K. Dunsterville illustr. 54.* ECUADOR: Prov. of Azuay: Río Matadero west of Cuenca, 9,600-10,000 ft., 3 Mar. 1945, *W. H. Camp E-1997* (AMES, NY); between Cuenca and Lago Zorrogucho, alt. 2600 m, *C. H. Dodson & G. Frymire 15* (AMES, JEPS, MO, US); Lago Zorrogucho, alt. 3000 m, 10 Jan. 1958, *C. H. Dodson 277* (SEL); same area, alt. 3000 m, 17 July 1977, *C. Luer, J. Luer & G. Luer 1740* (SEL); "Guayaquil" (probably collected in Azuay), *Klaboch 75* (W). Prov. of Pichincha: between Apuela and Otavalo, alt. 2500 m, collected by W. Teague, Nov. 1978, flowered in cultivation in San Francisco, 20 Aug. 1979, *C. Luer 4100* (SEL); Pasachoa, alt. 3000 m, 15 July 1983, *A. Hirtz 1134* (SEL); Ruminiahui, Parroquia Amaguaña, alt. 2800-3500 m, 6 Feb. 1988, *C. Cernón & R. Alarcón 3514* (MO). Prov. of Tungurahua; obtained from A. Hirtz, Nov. 1990, flowered in cultivation in Bristol, CT, *A. Jesup 142* (MO). Prov. of Morona-Santiago: near Paute dam, alt. 2600 m, collected by A. Andreetta, M. Portilla & L. Morocho, flowered in cultivation at Paute, 24 Jan. 1989, *C. Luer 14060* (MO); same collection, flowered in cultivation in Bristol, CT, 1995, *A. Jesup 118* (MO), C. Luer illustr. 17250.

This species was first collected by Humboldt and Bonpland during their South American expedition in southern Colombia near Pasto late in 1801. It was described as *Restrepia antennifera*, and it is the species upon which the genus was founded in their monumental work with Kunth in 1816. The synsepal is described as being yellow with red stripes, and the lip is described as being flat, broadly oblong, truncate, and dotted with red. Plants corresponding to the published description and illustration are still to be found in the same area today. The species is correctly illustrated in Curtis' *Botanical Magazine* t. 7930 of 1903. Schlechter referred to this plate as *R. hemsleyana*, confirmed to be *R. antennifera* by the specimen preserved at K.

Restrepia antennifera is characterized by the large habit, often with proliferating ramicauls, and with large flowers, the sepals measuring well over three centimeters in length. The immense sepals of some clones reach six centimeters in length (*A. Jesup 142*). A collection by Klaboch (*Klaboch 75*) has sepals 54 millimeters long in the dried state, which is another unusually large form. The synsepal is elliptical and boat-shaped, especially toward the base. The color is yellow and it is longitudinally striped in brown or red, but more or less confluent spots are present at the base.

The petals of specimens seen from near the type-locality vary from merely microscopically erose along the margins above the base to bearing a few capillary processes. Similar marginal processes occur inconstantly on the petals of plants from other localities.

The lip is broadly oblong and truncate with an indistinct or absent isthmus between the hypochile and the epichile. The surface and margins of the epichile vary from essentially smooth to microscopically verrucose and serrulate. The hypochile is smooth and concave with the usual pair of delicate, uncinate appendages.

Although *R. guttulata* with the purple-spotted synsepals appears distinctly different from *R. antennifera*, there is little difference other than the color. The lips of both species are large, oblong and truncate, but the margins and surface of the blade of the lip of *R. guttulata* vary from microscopically to distinctly denticulate and verrucose. The distributions of the two taxa are sympatric, and specimens with intermediate forms occur (Plate 3.). For these reasons I had considered for many years the two taxa to be conspecific.

Restrepia antennifera is distinguished from the similarly colored *R. brachypus* by the larger flower with an oblong, essentially glabrous lip that contrasts with the fringed, subpandurate, three-striped lip of the latter.

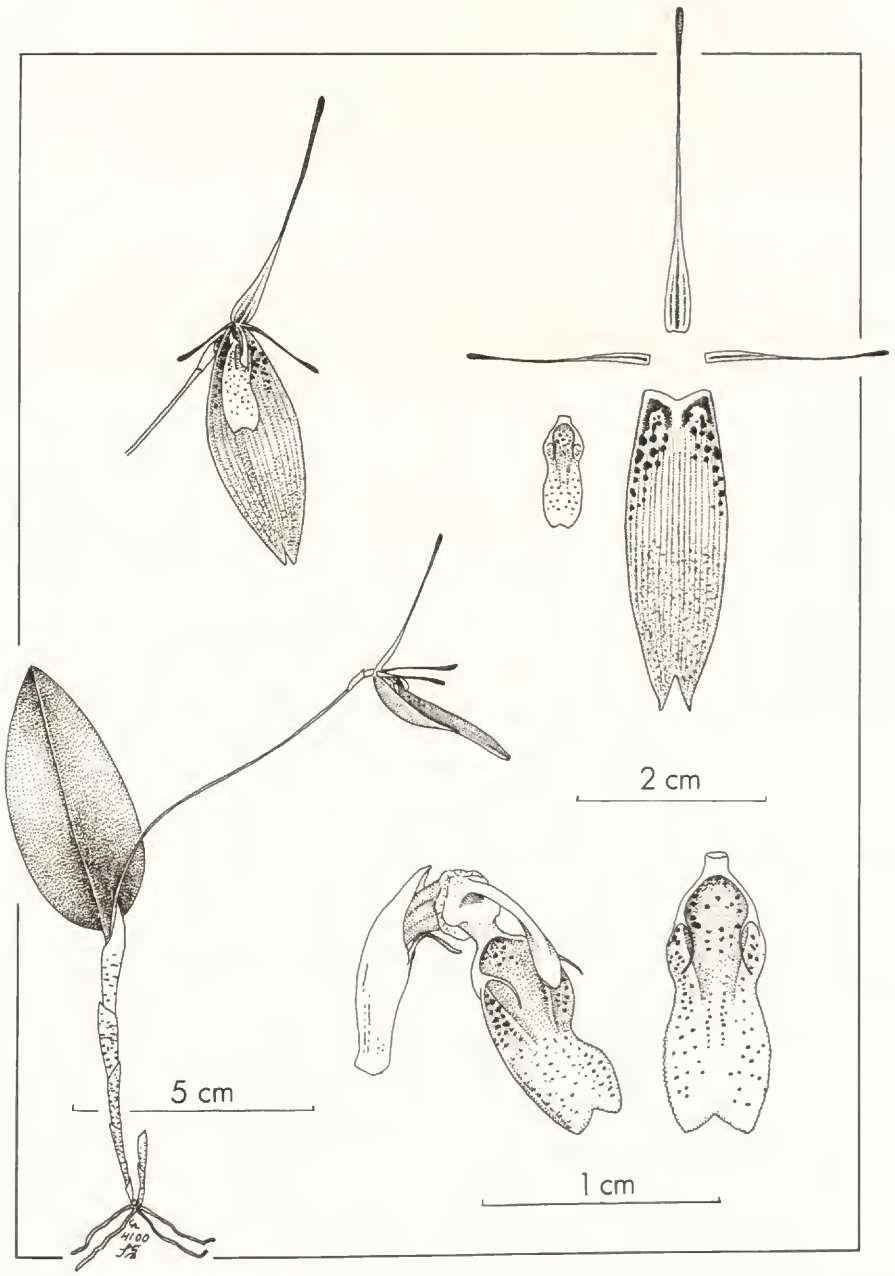


Plate 3. *Restrepia antennifera* H.B.K.
(Ecuador)

Restrepia aristulifera Garay & Dunst., Venez. Orchids Illustr. 5: 258, 1972.

Ety.: From the Latin *aristulifer*, "bearing little awns," referring to the minute, aristate processes at the base of the petals.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 6-25 cm long, enclosed by 6-12 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, the lower ones heavily spotted with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical, acute, 5-9 cm long, 3-4 cm wide, the base cuneate or rounded, contracted into a twisted petiole ca. 1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back of the leaf; peduncle slender, 3-5 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 2 mm long, with a minute filament; ovary dark purple-brown, arcuate, lightly costate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the midvein red, narrowly ovate below the middle, attenuated above the middle with the apex thickly clavate, 6 mm long, the petal 25-27 mm long, 3-4 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into an elliptical lamina, microscopically pubescent, concave basally, pale yellow, spotted with red-purple above the middle, veined in red-purple below the middle, 23-25 mm long, 12-15 mm wide expanded, the apex obtuse, minutely bifid; **petals** membranous, translucent white with the midvein purple, narrowly ovate-triangular below the middle, the margins with 1-3 minute irregular processes, attenuated above the middle with the apex clavate-thickened, 15-17 mm long, 1.5-2 mm wide above the base; **lip** yellowish, spotted with red-purple, oblong, 8.5-11 mm long, 3.5-4 mm wide, the epichile oblong, minutely verrucose-serrate, the apex truncate, slightly retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process as well as 1-2 lesser processes, the disc with a low carina extending forward from the base of each process onto the epichile, the base truncate, connected to the column-foot by a stout, cylindrical neck; **column** greenish white, slender, clavate, 5-6 mm long, the base pedestal-like with a pair of obtuse calli.

VENEZUELA: Edo. Táchira: cloud forest along the Quenequea road, alt. 2600 m, Dec. 1968, *G. C. K. Dunsterville 1090* (Holotype: AMES); above Quenequea, alt. 1800-2000 m, 20 Aug. 1949, *J. Renz 5667* (Herb. J. Renz); Páramo El Zumbador, alt. 2600 m, 28 Nov. 1949, *J. Renz 6218* (Herb. J. Renz); Páramo Zumbador, south slopes, alt. 2200 m, 4 July 1951, *J. Renz 7163* (Herb. J. Renz); between Zumbador and Quenequea, alt. 2600-2700 m, 3 Mar. 1971, *J. A. Steyermark 105053* (AMES, K, VEN); road to Progreso, alt. 2800 m, flowered in cultivation Aug. 1975, *G. C. K. Dunsterville s.n.* (VEN); Páramo de Tamá, collected by R. Mejía, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16661* (MO). Without locality, obtained from R. Mejia, flowered in cultivation by M. & O. Robledo at La Ceja, 6 Oct. 1977, *C. Luer 1933* (SEL).

COLOMBIA: Dept. of Norte de Santander: Culagá valley above Tapatá north of Toledo, alt. 2300 m, 5 Mar. 1927, *E. P. Killip & A. C. Smith 20313, 20318* (AMES, NY); between Chinacota and Toledo, Páramo de Mefué, (**COLOR 1, LL**), alt. 2500 m, 12 May 1982, *C. Luer, R. Escobar & E. Valencia* 7796 (SEL); north of Toledo, Páramo de Mefué, alt. 2440 m, 25 May 1982, *C. Luer, R. Escobar & E. Valencia* 7966 (SEL); same collection, cultivated at Colomborquídeas, 22 Mar. 1989, *C. Luer 14356* (MO).

This species from the Eastern Cordillera of Colombia and adjacent Venezuela was first collected by Killip and Smith in 1927, their collections resting since that time among the indeterminates at AMES and NY. It was a specimen collected much later by Dunsterville that was finally described in 1972.

Restrepia aristulifera is easily recognizable by the tall habit with medium-sized, colorful flowers borne near the middle of the back surface of the leaf by erect peduncles about half as long as the leaf. The whitish sepals are delicately striped with pale rose below the middle and simultaneously minutely dotted with pale rose above the middle. The epichile of the rose-spotted lip is minutely verrucose and denticulate. A pure yellow form of the flower is cultivated at Colomborquídeas. The minute, aristate processes on the margins of the petals for which the species was named are variable throughout the genus.

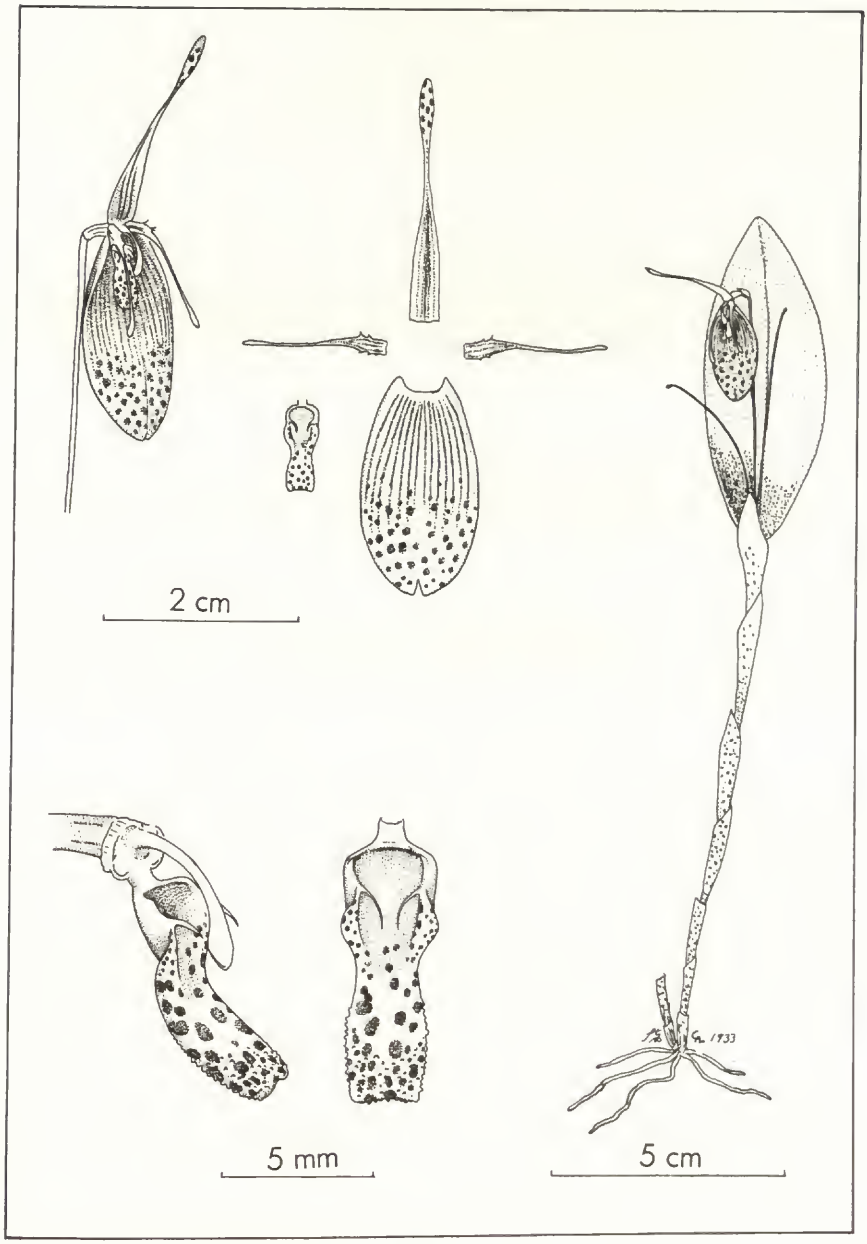


Plate 4. *Restrepia aristulifera* Garay & Dunst.

Restrepia aspasicensis Rchb.f., Bonplandia 3: 70, 1855, as *aspasicensium*
Ety.: Named for the community of Aspasica in the Eastern Cordillera of Colombia.

Syn.: *Restrepia dentata* Rolfe, Bull. Misc. Inform. 208, 1892.
Ety.: From the Latin *dentatus*, "dentate," referring to the denticulate labellum.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3.5 cm long, enclosed by 5-6 thin, whitish, loose, oblique, acute, compressed, more or less imbricating sheaths. **Leaf** erect, coriaceous, ovate, subacute, 3-4 cm long, 1.2-1.5 cm wide, the base cuneate into a twisted petiole 3 mm long. **Inflorescence** a small, solitary, flower, produced successively in a fascicle; peduncle slender, erect, 3-3.5 cm long; floral bract thin, tubular, 4 mm long; pedicel 2-3 mm long, with a filament 2 mm long; ovary 2 mm long; **sepals** membranous, glabrous, the dorsal sepal free, narrowly ovate in the lower third, contracted and thickened into a bulbous-clavate apex, 12 mm long, 1.8 mm wide above the base, 5-veined, the lateral sepals rose, spotted or striped with purple, connate into an elliptical-obovate, concave synsepal, 11.5 mm long, 5-6 mm wide, multiveined-veined, bifid at the tip with the apices subacute; **petals** membranous, translucent, narrowly oblong above the base, each side with one or two acute processes, narrowly linear above to the clavate apex, 7.5 mm long, 1.5 mm wide above the base; **lip** rose, densely spotted with purple, oblong, obtusely dilated below the middle, 4 mm long, 1.5 mm wide, 1.8 mm wide across below the middle, the epichile oblong, subtruncate, densely muricate-papillose, the disc with a pair of low, longitudinal calli from below the middle, rugose medially, the hypochile broadly concave, with marginal, filiform, uncinate processes nearly 2 mm long, the subtruncate base connected to the column-foot by a short, thick, cylindrical neck; **column** slender, 3 mm long, the base pedestal-like.

COLOMBIA: Dept. of Norte de Santander: Aspasica, *H. Wagener s.n.* (Holotype: W; Isotype: K). Without collection data, cultivated at the Royal Botanic Gardens, Glasnevin, 1890, 1895, received from *C. W. Moore s.n.* (K, type of *R. dentata*); without locality, cultivated at the Royal Botanic Gardens, Kew, flowered in cultivation 24 Jan. 1919, *Hort. Kew. s.n.* (K); without locality, obtained from Great Lakes Orchids, flowered in cultivation by W. Rhodehamel at Hoosier Orchids in Indianapolis, Indiana, June 1992, *C. Luer 16300* (MO); same collection, cultivated by Ann Jesup in Bristol, CT, May 1996, (**COLOR 1, LR**). VENEZUELA: Edo. Mérida: without specific collection data, alt. 1800 m, obtained from R. Jenny, cultivated at the Basel Botanical Garden by A. Müller, 9 Nov. 1992, *J. Renz 15851* (Herb. J. Renz).

This vegetatively small species was first collected near Aspasica in the old province of Ocaña in the Eastern Cordillera of Colombia by the intrepid collector Hermann Wagener and described by Reichenbach. In his Folia Orchidacea, Lindley erroneously placed the locality in Venezuela.

In 1890, plants without collection data were received by the Royal Botanic Gardens at Kew from Mr. Moore at the Royal Botanic Gardens, Glasnevin, Ireland, and were described by Rolfe as *R. dentata*. A collection of *R. elegans* from Táchira, Venezuela, is misidentified as *R. aspasicensis* in Venezuelan Orchids Illustrated.

Not only is *R. aspasicensis* vegetatively very small, but it is also the smallest-flowered species of the genus. The purple-spotted synsepal is only about 10 millimeters long. In his description, Reichenbach exaggerates the small size, declaring that the flowers are three times smaller than those of *R. wageneri* with sepals about fifteen millimeters long, unless he was confusing something larger with *R. wageneri*. The clavate tip of the dorsal sepal is comparatively large. The margins of the petals are variably dentate toward the base, but the processes are proportionately large. The lip is only four millimeters long with a proportionately large hypochile with uncinate processes about two millimeters long, half the length of the lip. The epichile is densely muricate-papillose.

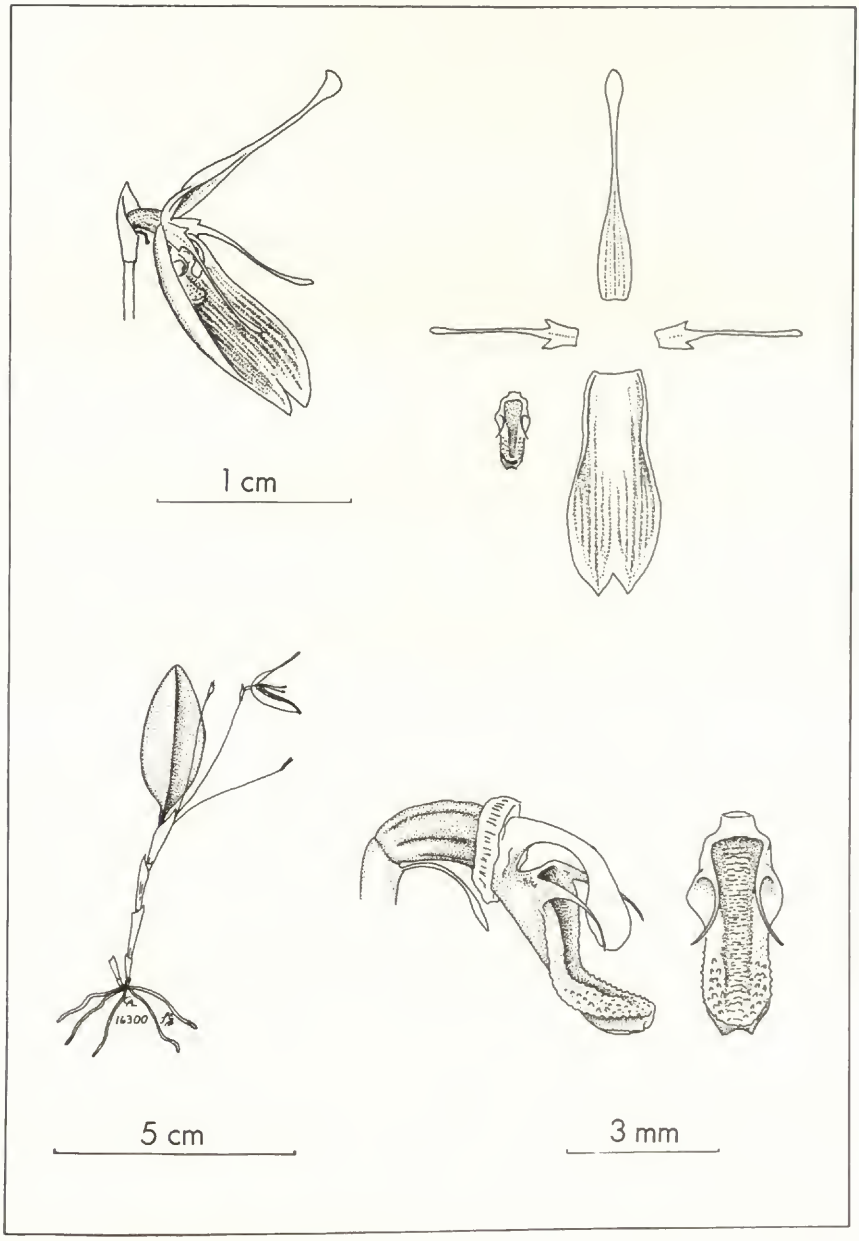


Plate 5. *Restrepia aspasicensis* Rchb.f.

Restrepia brachypus Rchb. f., Flora 69: 554, 1886.

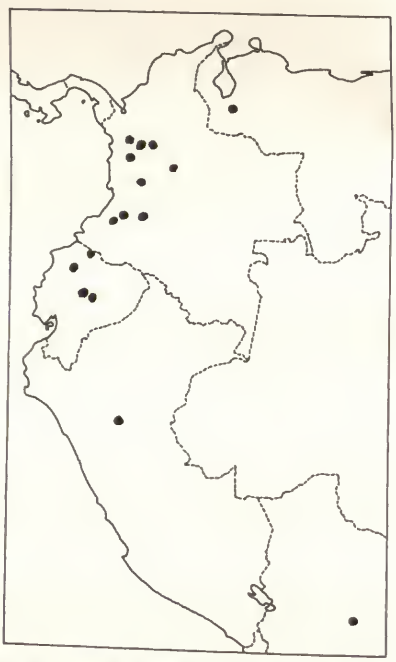
Ety.: From the Greek *brachypus*, "short-footed," referring to the short ramicaul.

Syn.: *Restrepia striata* Rolfe, Gard. Chron. 1: 137, 1891.
Ety.: From the Latin *striatus*, "striped," referring to the synsepal.

Syn.: *Pleurothallis hawkesii* Flickinger, Orchid Rev. 71: 336, 1963, non *P. striata* Focke.
Ety.: Named in honor of Alex Hawkes, author of several works on orchids.

Syn.: *Restrepia antennifera* subsp. *striata* (Rolfe) Mohr, Leafl. Schltr. Instit. 2: 13, 1996.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 5-16 cm long, sometimes prolific, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost lightly dotted with black. **Leaf** erect, coriaceous, elliptical-ovate, subacute, 4-8 cm long, 2-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back surface of the leaf; peduncle slender, 4-8 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 2-3 mm long, with a short filament; ovary purple, lightly sulcate, 3-4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent, veined in red-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 22-37 mm long, 3-4 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, yellow, yellow-orange, or tan, longitudinally striped in brown, sometimes with the stripes confluent toward the base, 21-37 mm long, 10-11 mm wide expanded, multiple-veined, the apex acute to subacute, minutely bifid; **petals** membranous, translucent white, veined and more or less suffused in red-purple, narrowly linear-ovate, the margins microscopically cellular-erose near the base, attenuated above the middle with the apex clavate-thickened, 15-19 mm long, 1.5 mm wide at the base; **lip** yellowish, with 3 usually prominent, longitudinal stripes, marked with red-brown on both sides, narrowly oblong-subpandurate, 9-13 mm long, 2-2.75 mm wide, the epichile oblong, truncate, coarsely verrucose with fimbriate margins, the hypochile suborbicular, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 5-6 mm long, the base pedestal-like with a pair of obtuse calli.



COLOMBIA: without locality, flowered in cultivation, *F. C. Lehmann 3215* (Holotype: W). Dept. of Antioquia: Río Dolores, northern slopes of Santa Rosa de Osas, alt. 1700-2200 m, Dec. 1891, *F. C. Lehmann 7053* (AMES, K); Yarumalito, northeast of Santa Rosa, alt. 2350 m, 15 May 1985, *C. Luer, R. Escobar & E. Valencia 11381* (MO); Sonsón, alt. 2300-2600 m, Dec. 1891, *F. C. Lehmann 7273* (AMES, NY, W); Sonsón, Quebrada Oscura, alt. 2100 m, "the red striata," (**COLOR 2, LL**), collected by R. Escobar & E. Valencia, 7 July 1985, flowered in cultivation at Colomborquídeas, 15 May 1993, *C. Luer 16687* (JAUM; MO); Sonsón, Río Verde de los Henao, alt. 2500 m, collected by J. Sema, 1977, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO); Urrao, Pabón, alt. 1900 m, collected by M. Zapata, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO); Llanos de Cuibá, alt. 2500 m, collected by E. Valencia, May 1989, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO); San Luis, Quebrada La Argentina, alt. 1800 m, collected by J. Sema, 1976, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO); Hda. Normandía above Colomborquídeas, alt. 2500 m, collected by F. & J. Lopez, Jan. 1993, flowered in cultivation at Colomborquídeas, 9 June 1996 *R. Escobar s.n.* (JAUM, MO); Abriaqui, between Abriaqui and Páramo de Frontino, alt. 2000 m, collected by E. Valencia, 1986, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO). Dept. of Cauca: without collection data, cultivated at Glasnevin by *Moore s.n.* (Lectotype of *R. striata*: K). Dept. of Cundinamarca: Guayabetal, alt. 1750 m, collected by E. Valencia, Nov. 1995, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO). Dept. of Huila: between Puracé and La Plata, Hda. Meerenberg, alt.

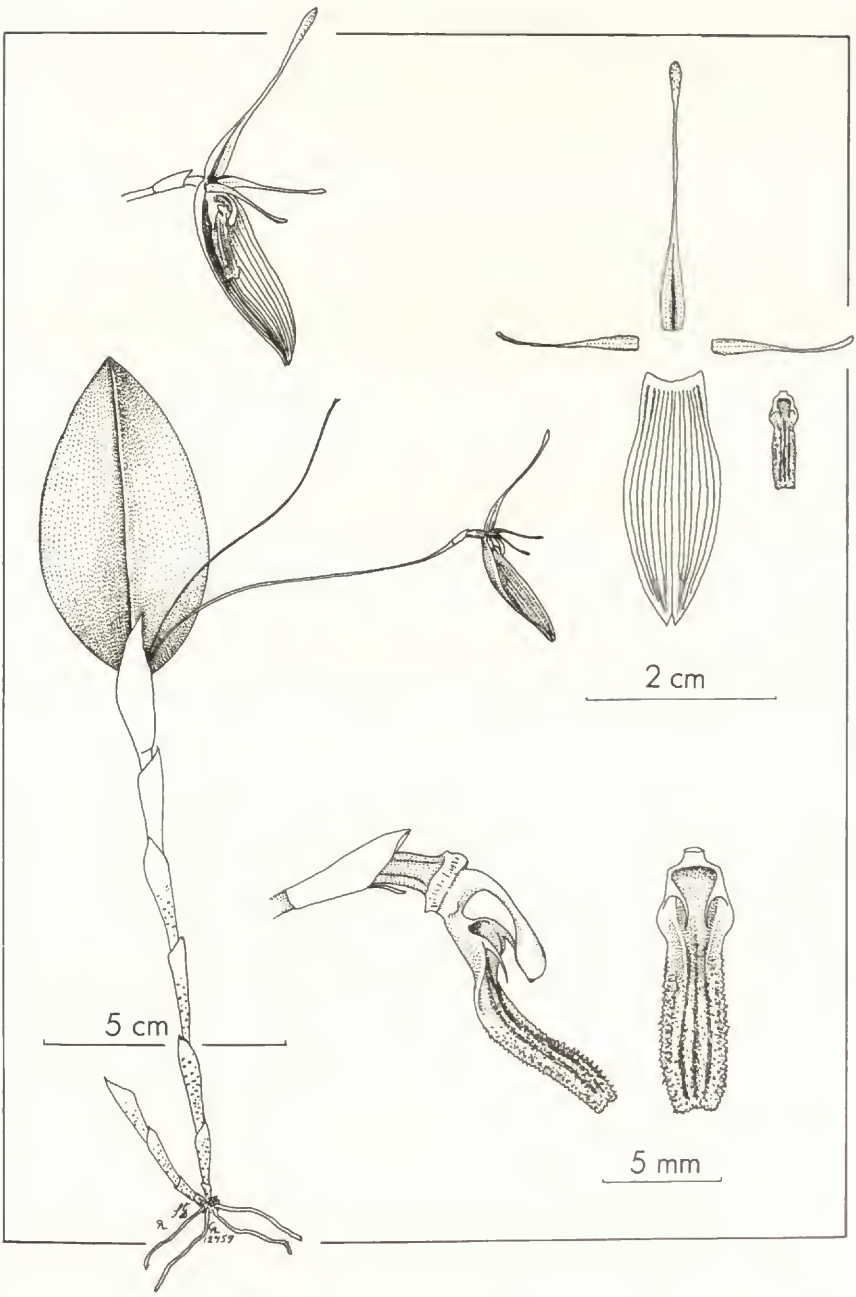


Plate 6. *Restrepia brachypus* Rchb.f.
(Colombia)

1700 m, collected by C. Luer & R. Escobar, Nov. 1982, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO). Dept. of Risaralda: near Pereira, flowered in cultivation by S. Tsubota, 10 May 1993, *C. Luer 16767* (MO). Dept. of Valle del Cauca: west of Roldanillo, alt. 1500-2000 m, 1895, *F. C. Lehmann 8368* (AMES); without locality, Sept. 1918, *M. T. Dawe 840* (K); between Cali and Buenaventura, alt. 1500 m, 3 July 1965, *C. H. Dodson & H. Hills 3231* (SEL); El Queremal west of Cali, (**COLOR 2, UL**, striped, **COLOR 2, UR**, spotted), alt. 1500 m, collected by E. Valencia, cultivated at Colomborquídeas, 5 May 1993, *C. Luer 16685* (MO); old road between Cali and Buenaventura, Queremal, alt. ca. 1500 m, collected by J.C. Ordoñez, June 1989, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO); Anserma, La Carbonera, alt. 1900 m, collected by J. Aguirre, April 1985, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM, MO).

VENEZUELA: Edo. Mérida: La Carbonera, alt. 6500 ft., Mar. 1963, *G. C. K. Dunsterville 762*

ECUADOR: Prov. of Carchi: eastern cordillera of Tulcán, Quebrada Pun, alt. 2500-3200 m, 5 Feb. 1881, *F. C. Lehmann 346* (W); east of Tulcán, flowered in cultivation at Colomborquídeas, 16 May 1993, *C. Luer 16898* (MO). Prov. of Morona-Santiago: above Macas, alt. 1500 m, collected by W. Teague, flowered in cultivation at Colomborquídeas, 16 May 1993, *C. Luer 16868* (MO). Prov. of Pichincha: Canchacato near Río Silante, alt. 2000 m, 28 Oct. 1979, *C. Luer, J. Luer & A. Hirtz 4418* (SEL); Cerro Azul, west flank of Volcán Illiniza, alt. 2800 m, 23 Jan. 1987, *C. Luer J. Luer & A. Hirtz 12459* (MO). Prov. of Tungurahua: Tungurahua, ca. 1857, *Spruce 5385* (K, W); Volcán Tungurahua, 6000-9000 ft., June 1877, *F. C. Lehmann 72* (W); slope of Volcán Tungurahua above Baños, alt. 3000 m, 27 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & F. Freire 9764* (MO); Leito, Cordillera de los Llanganates, alt. 3000 m, 12 Oct. 1984, *A. Hirtz 1983* (MO); same area, alt. 3100 m, 11 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11166* (MO).

PERU: Dept. of Huánuco?: collected by Fred Fuchs, cultivated by Carl Withner, photo by Ron Parsons.

BOLIVIA: Dept. of Cochabamba: Espejo, wet forest northeast of Cochabamba toward Villa Tunari, alt. ca. 1800 m, collected by F. Fuchs Jr. et al., flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17541* (MO).

This species is frequent and widely distributed in all three cordilleras of Colombia, both sides of the Andes of Ecuador, but apparently infrequent in Peru, and rare in Bolivia. A small fragment, possibly a "keiki" of a cultivated plant collected somewhere in Colombia by Lehmann, led to the misnomer, "brachypus" for the short stem of the specimen. No flower remains with the specimen on the type-sheet; the single envelope is empty. From the outline of the flower, the sepals were about 23 millimeters long. The synsepal is described as 13-nerved (13 stripes as seen on living flowers). The drawing of the lip is exactly as it is seen on living plants: it is subpandurate with an oblong, denticulate blade with three, prominent, longitudinal stripes. There can be no doubt about the identity of this fragment, there being no other species to which these features could apply.

In Day's album of paintings at Kew there is a colored illustration of this species from Hugh Low & Co. dated 25 June 1885, a year earlier than Reichenbach's description of *R. brachypus*. Perhaps collections of this species exported from Colombia by Lehmann found their way into more than one European greenhouse.

Rolfe redescribed this species in 1891, again from a fragment of a plant that flowered in cultivation, this time by Moore at Glasnevin in Dublin. Except for "Cauca," no other collection data are known. As *R. striata*, it is illustrated in Curtis' *Botanical Magazine*, t. 7233, 1 May 1892.

Restrepia brachypus is superficially similar to sympatric *R. antennifera*. The yellow synsepals of both species are similarly thinly striped with red or brown. It is readily distinguished from the latter by smaller flowers with a narrower, subpandurate, denticulate, verrucose lip. Also yellow and finely striped are the smaller flowered *R. wageneri* and striped forms of *R. trichoglossa*.

Almost always 13 longitudinal stripes, six on each lateral sepal and a center stripe along the line of union are present. Rarely the stripes break up into short bars or random spots (Color 2, UL, UR) on flowers of plants among numerous others with normal stripes. Color forms with dark yellow, orange, or tan synsepals are occasionally encountered.

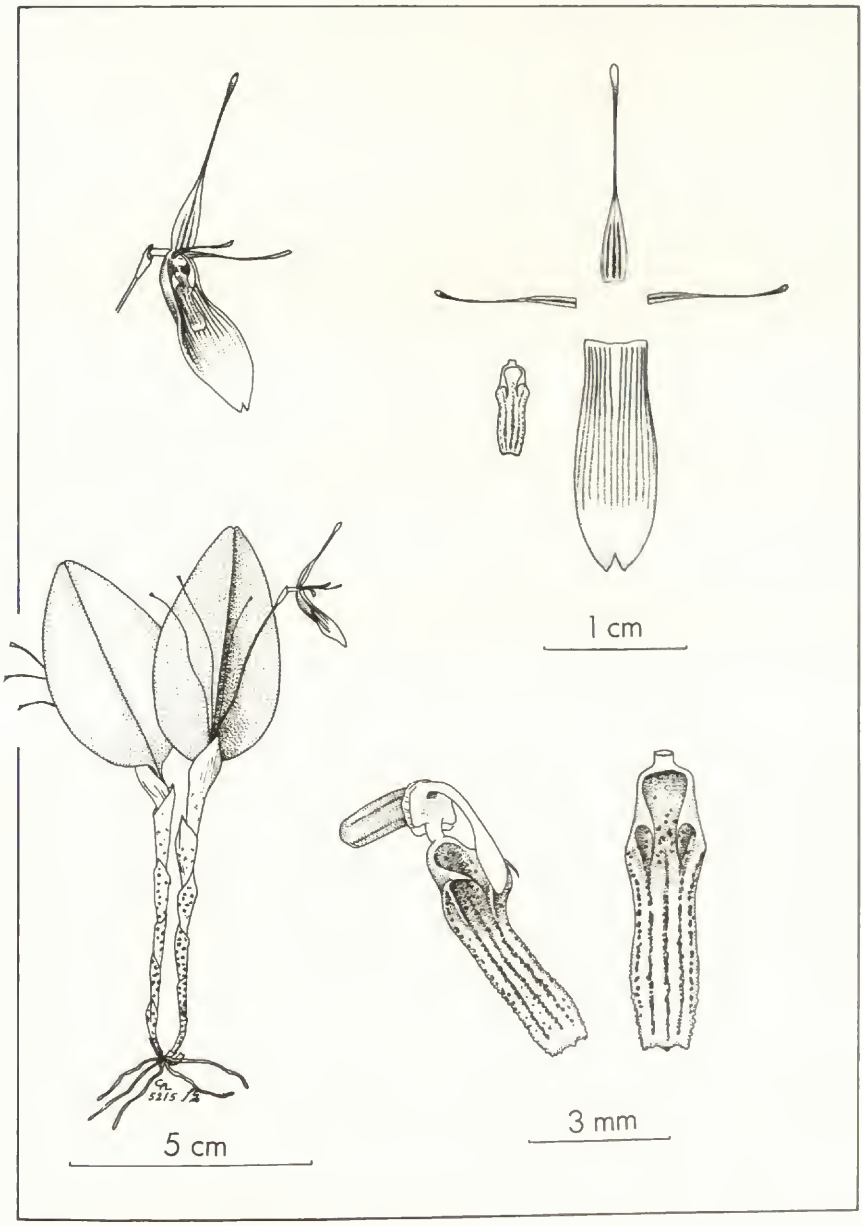


Plate 7. *Restrepia brachypus* Rchb.f.
(Bolivia)

Restrepia chameleon Luer & Escobar, Orquideología 20: 120, 1996.

Ety.: Named for a *chameleon*, the lizard that changes color. *Chameleon* from the Greek, "a creeping lion," referring to the creeping, ferocious-appearing beast.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 8-18 cm long, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost spotted or marked transversely with black. **Leaf** erect, coriaceous, elliptical-ovate, subacute, 5-9 cm long, 2-5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 5-9 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 3 mm long, with a shorter filament; ovary 5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein red-purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 24-42 mm long, 3.5-4 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, white or pale yellow, spotted or striped in light purple, 25-43 mm long, 14-15 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white with the midvein and marginal veins purple, narrowly linear-triangular, the margins with or without capillary processes near the base, attenuated above the middle with the apex clavate-thickened, 16-20 mm long, 1.75-2 mm wide at the base; **lip** pale rose to pale orange, lightly spotted with orange-brown, elliptical oblong, 10-11 mm long, 4-5 mm wide, the epichile indistinct from the hypochile, microscopically subverrucose with smooth margins, the apex truncate, the hypochile suborbicular, concave with erect margins, each side with a thin, attenuated, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 6 mm long, the base pedestal-like with a pair of yellow, obtuse calli.

COLOMBIA: Dept. of Norte de Santander: Páramo de Jurisdicciones, (**COLOR 3, UL**, striped, **COLOR 3, UR**, spotted), epiphytic in a forested, subparamo valley, alt. 2700 m, collected by E. Valencia, 1984, flowered in cultivation at Colomborquídeas, 10 Apr. 1988, *C. Luer 13130* (Holotype: JAUM; Isotype: MO); same collection, flowered in cultivation by Ann Jesup #50, at Bristol, CT, *C. Luer 17814* (MO); same collection, flowered in cultivation at Colomborquídeas, 4 July 1996, *C. Luer 17937* (MO).

This species is very closely allied to *R. antennifera*, differing principally in the color of the flowers and morphology of the lip. Although locally abundant, *R. chameleon* is apparently known from only a single, forested, subparamo valley below the Páramo de Jurisdicciones in the Eastern Cordillera of Colombia, very near another valley in which *R. citrina* occurs.

Both *R. chameleon* and *R. citrina* were discovered in 1981. *Restrepia citrina* was in flower, but the former was not. After flowering began at Colomborquídeas, Eladio Valencia was dispatched to bring more plants into cultivation. Very likely this population is a floriferous, natural hybrid between *R. citrina* and *R. antennifera* which is known to occur elsewhere in nearby parts of the Eastern Cordillera.

Restrepia chameleon is characterized by the large habit, and large or medium-sized flowers that exhibit the unique quality of bearing either spots or stripes. Most synsepals are white or pinkish white, but a significant percentage are pale yellow. In either case, the additional pigmentation consists of small, dispersed spots, small spots in rows, or stripes either partial or well-defined.

The lip is broadly elliptical-oblong, microscopically cellular-verrucose, with the hypochile proportionately short and indistinctly demarcated from the epichile.

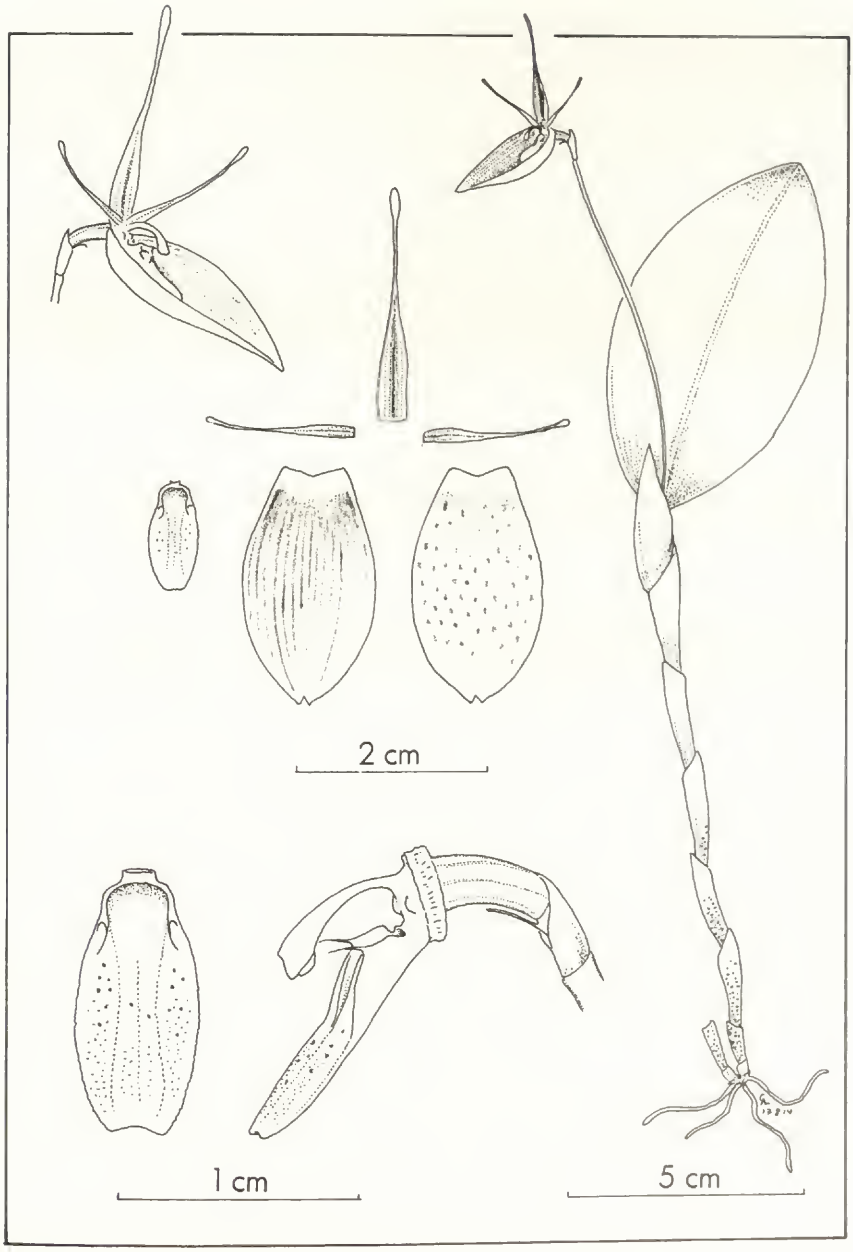


Plate 8. *Restrepia chameleon* Luer & Escobar

Restrepia chocoënsis Garay, Orquideología 8: 181, 1973.

Ety.: Named for the Department of Chocó, Colombia, where the species was discovered.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 6-10 cm long, enclosed by 4-5 tubular, imbricating, whitish sheaths, more of less minutely dotted in transverse bars of dark purple or black. **Leaf** erect, thickly coriaceous, rigid, narrowly linear-ovate, conduplicate to sulcate, acute, 9-15 cm long, 1-1.5 cm wide, the base epetiolate, continuous with the ramicaul. **Inflorescence** a solitary flower, produced successively in a fascicle from near the apex of the ramicaul; peduncle 2.5-3 mm long; floral bract spotted with purple, thin, tubular, 6 mm long; pedicel stout, 6-7 mm long, with a short filament; ovary lightly sulcate, spotted in purple, 5-6 mm long; **sepals** membranous, the dorsal sepal free, horizontal, yellow-orange, diffusely spotted with dark purple, very narrowly triangular, attenuated above the middle with the apex clavate-thickened, 35 mm long, 3.5 mm wide, the lateral sepals minutely pubescent, connate to above the middle into an ovate, bifid lamina, light yellow, diffusely dotted with red-purple, 38-41 mm long, connate 22-30 mm, 9-10 wide together, the apices thickened, free for about 10 mm, suffused with orange, linear-oblong, recurved, obtuse; **petals** membranous, translucent white with a purple spots, obovate below the middle, narrowly attenuate above the middle with the apex slightly thickened, the margins near the middle with a few, minute, capillary processes, 11 mm long, 2.25 mm wide; **lip** yellow, dotted with purple, thick, ovoid, 8 mm long, 3 mm wide, the epichile ligulate, minutely verrucose with minutely serrate margins, the apex rounded, the hypochile subquadrate, concave with minutely denticulate margins and an uncinate process on each side, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base rounded, connected to the column-foot by a broad, rigid, cylindrical neck; **column** greenish white, slender, clavate, 4 mm long, the base pedestal-like with a pair of obtuse, yellow calli.

COLOMBIA: Dept. of Chocó: Carmen de Atrato, (**COLOR 2, LR**), alt. 1800-2000 m, collected by J. M. Serna, 1973, flowered in cultivation by Alvaro Mejia, *G. Escobar 1054* (Holotype: AMES); same collection, cultivated by M. & O. Robledo at La Ceja, 3 Oct. 1977, *C. Luer 1899* (SEL); same collection, cultivated at Colomborquídeas, 8 May 1993, *C. Luer 16684* (MO). Dept. of Antioquia: Urrao, collected by E. Segura, 1994, cultivated at Colomborquídeas, *R. Escobar s.n.* (JAUM).

This rare species has been found only on two occasions in the Western Cordillera of Colombia by professional collectors. It was first cultivated by Alvaro Mejía and seen by Gilberto Escobar R., eminent, amateur orchidologist, who sent a specimen to AMES where it was described by Leslie Garay.

Vegetatively *R. chocoënsis* is one of the two species of the genus that deviates markedly from the usual pattern of all the others. The leaves of *R. chocoënsis* are thickly fleshy, rigid, narrowly ovate, conduplicate and sulcate without a petiole. They are neither terete nor semiterete as once stated. Propagation from a severed leaf with ramicaul is uncertain and much slower than with other species.

The large flower is borne by a very short peduncle that bears the flower at the base of the leaf with the elongate lateral sepals extending downward along the ramicaul. The sepals are diffusely spotted with purple, the laterals free above the middle with thickened, curved apices. The dorsal sepal is held horizontally or pointing forward. The petals are broad below the middle with large spots, and attenuated above the middle. The lip is ovoid without a demarcation between the epichile and the hypochile. The upper margins of the hypochile are minutely serrate. The epichile is verrucose and denticulate with the apex rounded.

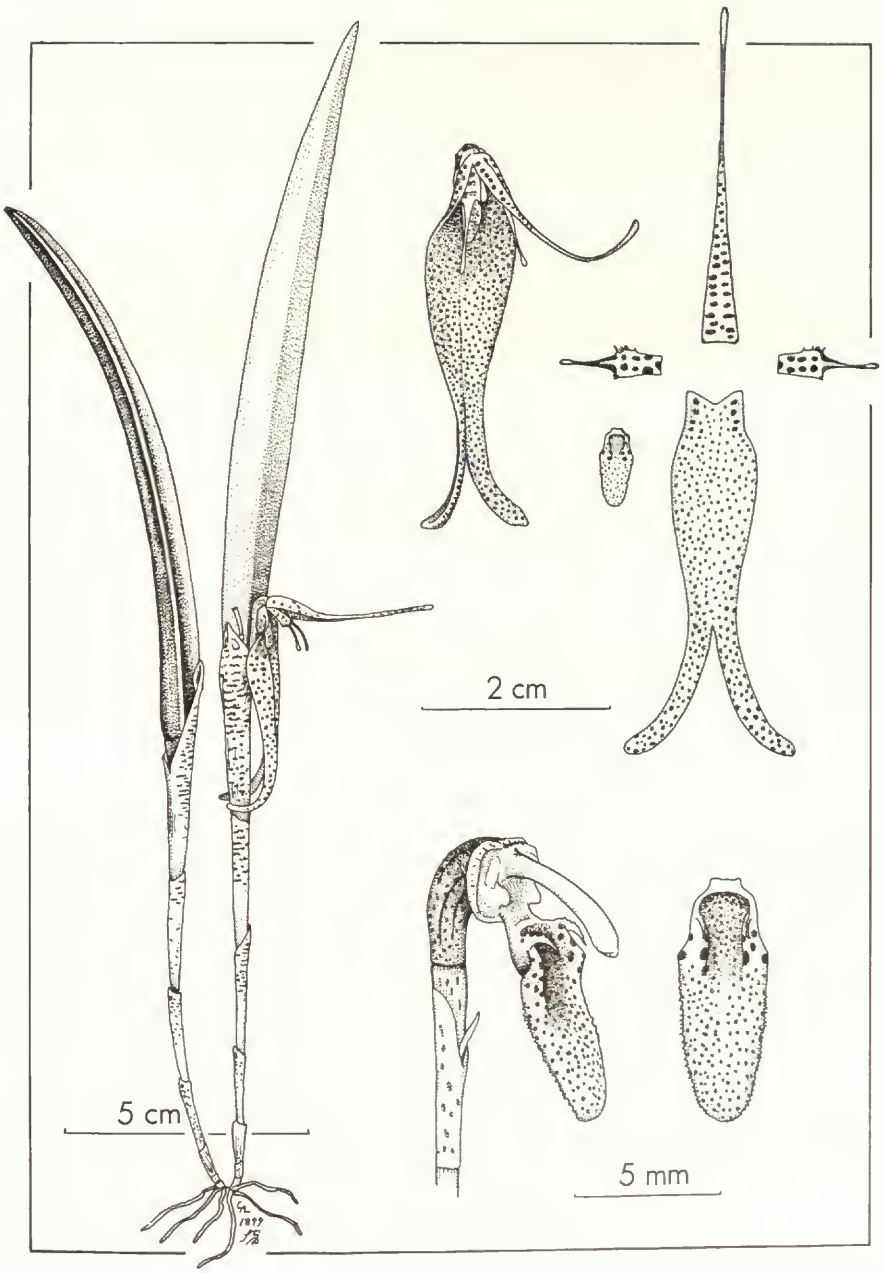


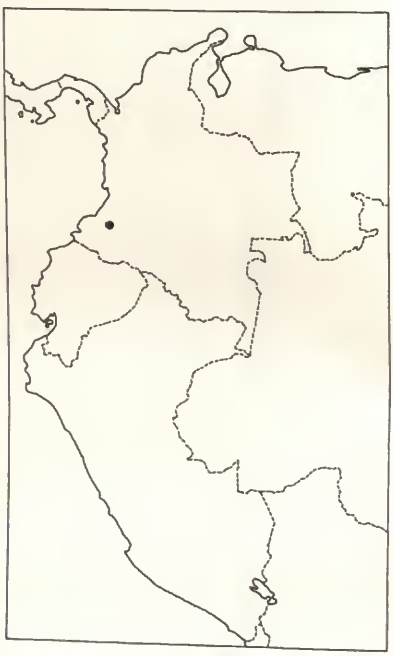
Plate 9. *Restrepia chocoënsis* Garay

Restrepia chrysoglossa Luer & Escobar, Orquideología 20: 123, 1996.

Ety.: From the Greek *chrysoglossa*, "a golden yellow tongue," referring to the labellum.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, 9-20 cm long, enclosed by 8-10 thin, loose, compressed, oblique, imbricating, distichous sheaths, the lowermost dotted with brown. **Leaf** erect, coriaceous, ovate, acute to subacute, 6-8 cm long, 3-4 cm wide, the base rounded, contracted into a petiole 3-5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, erect, 3-4 cm long; floral bract thin, tubular, 5 mm long; pedicel 3 mm long, with a filament 2 mm long; ovary 5 mm long; **sepals** membranous, the dorsal sepal free, suberect, yellow, narrowly ovate-triangular in the lower half, attenuated above to the clavate-thickened apex, 20 mm long, 2.5 mm wide at the base, 5-veined, the lateral sepals yellow, striped with red below the middle, connate to near the apex into an obovate lamina, 20 mm long, 10 mm wide, 12-veined, the apex obtuse or rounded, minutely bifid; **petals** membranous, translucent yellow, narrowly triangular, attenuated to a clavate-thickened apex, 13 mm long, 1.2 mm wide, the margins microscopically serrulate on the lower half; **lip** yellow-orange, oblong-ovate, 9 mm long, 4.25 mm wide, dilated near the middle, the epichile ovate, thickened, smooth, subtruncate, the hypochile indistinct, subquadrate, concave, with a microscopic, capillary, uncinate process, the disc featureless, the base connected to the column-foot by a cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of low calli.

COLOMBIA: Dept. of Valle del Cauca: Munic. of Restrepo, (COLOR 3, LL), alt. 2100 m, collected by Francisco Villegas in 1990, flowered in cultivation at Colomborquídeas April 1996, *C. Luer 17874* (Holotype: JAUM; Isotype: MO).



This species is apparently very rare, known from only one collection in southern Colombia by Francisco Villegas who has cultivated it at Orquifollajes, Ltd., above Guarne since its discovery. The flowers are superficially similar to those of *R. flosculata*, but the latter is identified by the short peduncles that bear the flower at the back of the base of the leaf. The peduncles of *R. chrysoglossa* are longer and flexible, bearing the flower away from the leaf.

Restrepia chrysoglossa is distinguished by the bright yellow synsepal with red stripes below the middle of the only clone known. The typically unmarked, yellow synsepal of *R. flosculata*, also can be similarly striped. The lip of *R. chrysoglossa* is glabrous, yellow-orange and unspotted. It is broadly ovate with the hypochile obscure with microscopic processes, and thickened toward the obtuse apex.

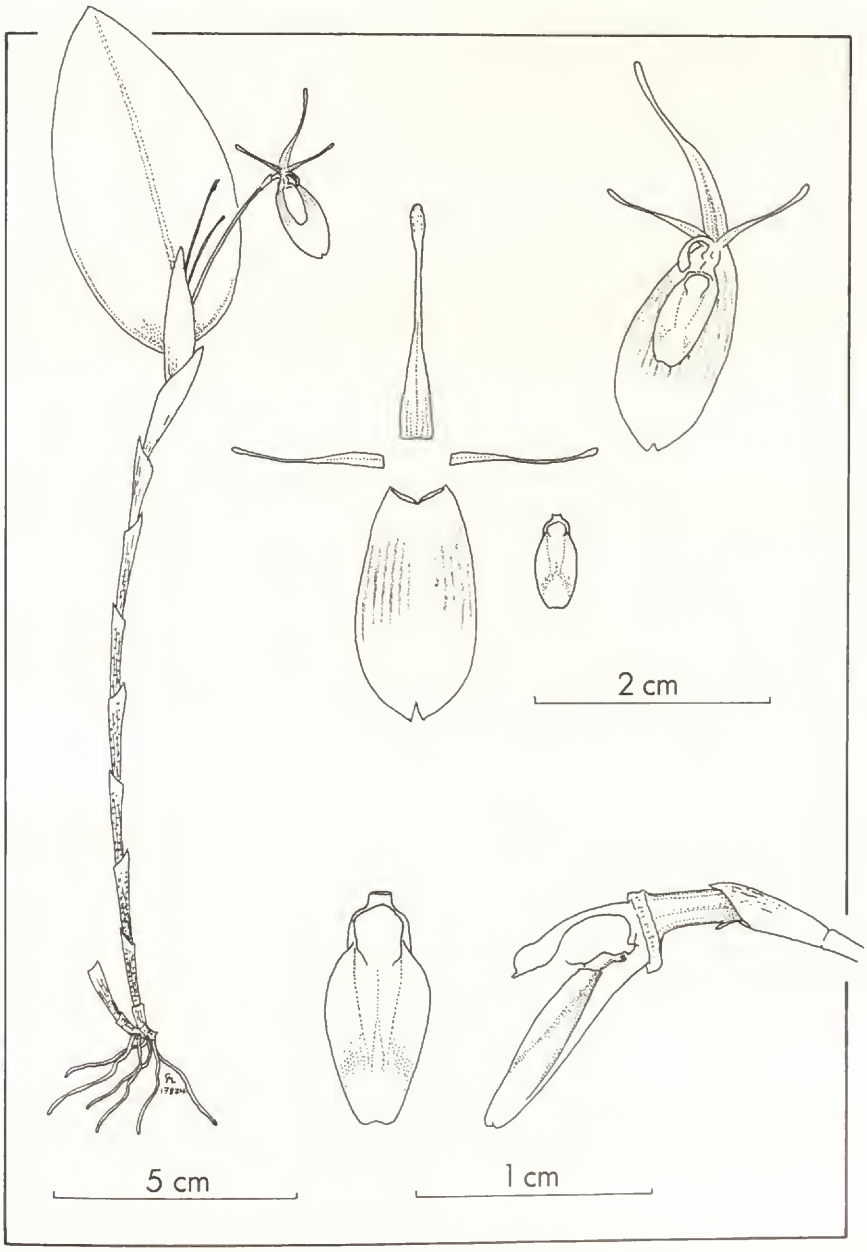


Plate 10. *Restrepia chrysoglossa* Luer & Escobar

Restrepia citrina Luer & Escobar, Orquideología 16: 40, 1983.

Ety.: From the Latin *citrinus*, "lemon-yellow," referring to the color of the synsepal.

Plant medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, straight, 5-14 cm long, enclosed by 4-7 thin, whitish, loose, compressed, more or less imbricating, oblique sheaths, the lower sheaths, more or less dotted with black. **Leaf** erect, coriaceous, ovate, acute, 6-8 cm long, 2-3.5 cm wide, the base broadly cuneate into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 4-6 cm long; floral bract thin, tubular, 6 mm long; pedicel 3.5 mm long, with a short filament; ovary 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the 3 veins purple, narrowly ovate in the lower quarter, attenuated above with the apex clavate-thickened, 30 mm long, 3 mm wide above the base, the lateral sepals connate to near the apex into an elliptical lamina, shallowly concave toward the base, lemon yellow, with scattered purple spots mostly below the middle, 30 mm long, 10 mm wide, the apex acute, shortly bifid; **petals** membranous, translucent, with the mid-vein and margins purple, narrowly linear-ovate, the margins microscopically serrate, attenuated above the middle with the apex clavate-thickened, 17 mm long, 1.25 mm wide above the base; **lip** yellow, diffusely spotted with purple, oblong-subpandurate, slightly dilated below the slight central constriction, 9 mm long, 2.5 mm wide, the epichile oblong, truncate, microscopically verrucose-denticulate, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the bases of the processes onto the epichile, the base subtruncate, connected to the column-foot by a thick, cylindrical neck; **column** greenish white, slender, clavate, 4 mm long, the base pedestal-like with a pair of orange, obtuse calli.

COLOMBIA: Dept. of Norte de Santander: epiphytic in cloud forest below the Páramo de Jurisdicciones, **(COLOR 3, LR)**, alt. 2600 m, 10 Nov. 1981, *C. Luer, J. Luer, R. Escobar & D. Portillo 6624* (Holotype: SEL; Isotype: JAUM); same area, 1 May 1982, C. Luer, J. Luer, R. Escobar & D. Portillo s.n., flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16668* (MO).

This relatively large species is apparently endemic in a subparamo forest of the Páramo de Jurisdicciones in the Eastern Cordillera of Colombia. It is allied to the *R. guttulata*-complex, but it is distinguished from the plants treated there by the tall, slender habit, and a lemon-yellow, purple-spotted flower with narrow floral parts. The most distinguishing feature is the narrow, minutely denticulate lip. It is usually about four times longer than broad.

Growing nearby in the next valley, *R. chameleon*, a species characterized by both spotted and striped flowers, is found. By contrast, the morphology and colors of *R. citrina* remain constant.

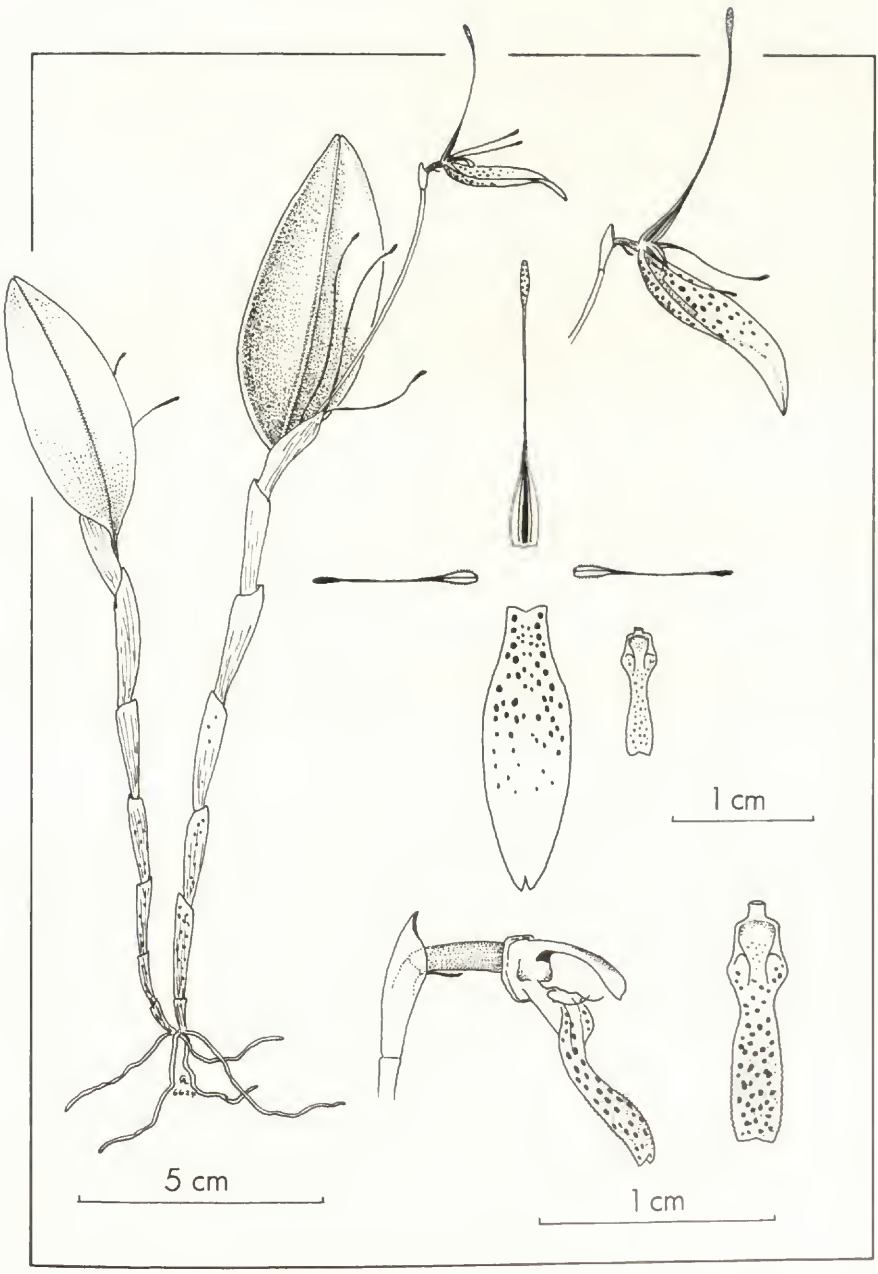


Plate 11. *Restrepia citrina* Luer & Escobar

Restrepia cloesii Luer, Orquideología 20: 125, 1996.

Ety.: Named in honor of Patrick Cloes of Hasselt, Belgium, who discovered this species.

Plant medium in size, epiphytic, caespitose; roots slender. **Ramicauls** erect, 4-8 cm long, enclosed by 6-8 thin, loose, compressed, more or less imbricating sheaths, the lower sheaths densely spotted with black. **Leaf** erect, coriaceous, elliptical-ovate, acute, 5-7.5 cm long, 2-3 cm wide, the base cuneate or rounded, contracted into a twisted petiole 1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 4-5 cm long; floral bract thin, tubular, 4.5 mm long; pedicel stout, 2 mm long, with a filament 5 mm long; ovary purple, subcostate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the midvein red-purple, narrowly ovate below the middle, attenuated above the middle with the apex narrowly thickened, 19 mm long, 2.5 mm wide above the base, 5-veined, the lateral sepals connate to the apex into an elliptical-obovate lamina, shallowly concave toward the base, yellow, thinly striped with purple-brown, 20 mm long, 9 mm wide expanded, 12-veined, the apex acute, barely bifid; **petals** membranous, translucent, with the midvein and margins suffused with purple, narrowly linear-ovate, the margins microscopically serrulate on the basal fourth, attenuated above the middle to a slender, terete apex, 11 mm long, 1 mm wide above the base; **lip** dull yellow with 3 brown veins and mottled with brown lateral to the veins, pandurate, obtusely angled above the isthmus, 9 mm long, 3 mm wide across the hypochile, 1.25 mm wide across the isthmus, 2.5 mm wide across the blade, the epichile ovate, smooth, entire, the apex subtruncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate processes, the disc with a pair of low carinae extending forward from the base of the process onto the epichile, the base rounded, connected to the column-foot by a rigid, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a small pair of low, obtuse calli.

PERU: Dept. of Amazonas: above Pomacochas, collected by P. Cloes, J. A. C. Schoonen & M. Arias, flowered in cultivation at Hasselt, Belgium, 15 Aug. 1993, *C. Luer 16967* (Holotype: MO).

Restrepia cloesii is apparently endemic in Amazonian Peru. Except for the smaller vegetative habit, it is similar to the gigantic *R. falkenbergii* that is endemic in a small area in the Central Cordillera of Colombia. The flowers of the two taxa are startlingly similar. In both species the flowers are of average size, those of *R. cloesii* being a little smaller. The synsepals are yellow and thinly striped in brown; the petals are narrowly terete without a clavate apex; and the smooth, glabrous lip is pandurate. The lip of *R. cloesii* is about 9 mm long with the epichile 2.5 mm wide, narrower than the hypochile. The lip of *R. falkenbergii* is about 13 mm long with the epichile 5 mm wide. The isthmus of *R. cloesii* is about 1.25 mm wide, while the isthmus of *R. falkenbergii* is about 2 mm wide.

Restrepia cloesii is also similar to *R. brachypus*, but it is distinguished from the latter by the non clavate petals and glabrous, narrowly pandurate lip.

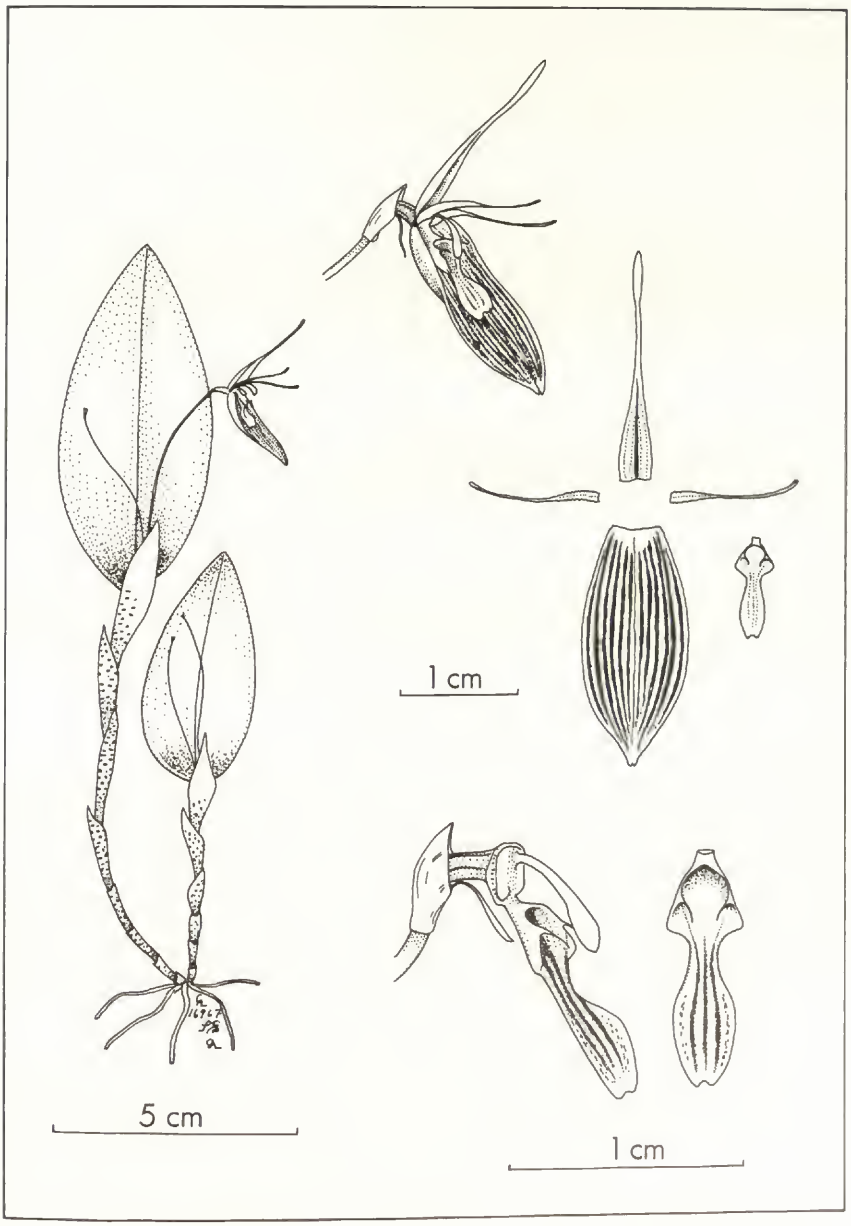


Plate 12. *Restrepia cloesii* Luer

Restrepia condorensis Luer & Escobar, Orquideología 20: 128, 1996.
Ety.: Named for the Cordillera del Condor where this species is found.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 6-7.5 cm long, enclosed by 5-7 thin, whitish, loose, oblique, compressed, imbricating sheaths, the lower sheaths dotted with black. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, subacute to obtuse, 3-4 cm long, 2-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle beyond the back surface of the leaf; peduncle slender, 5-6 cm long; floral bract thin, tubular, 5 mm long; pedicel 5 mm long, with a short filament; ovary 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, veined in purple, narrowly triangular below the middle, attenuated above the middle with the apex clavate-thickened, 30 mm long, 3 mm wide at the base, the lateral sepals rose, diffusely dotted with purple, purple, connate to the apex into a more or less flat, narrowly elliptical lamina, narrowed above and below the middle, 30 mm long, 9.5 mm wide, the apex acute, minutely bifid; **petals** membranous, translucent white with a purple midvein, narrowly ovate in the lower third, the margins entire or with an occasional cellular process, attenuated above the middle with the apex minutely clavate-thickened, 16 mm long, 1 mm wide above the base; **lip** yellow-orange, dotted with brown, pandurate, 9 mm long, 2 mm wide, the epichile oblong, retuse, fimbriate, the hypochile subquadrate, concave with thin, erect margins, each side with a minute, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, narrow, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of low calli.

ECUADOR: Prov. of Zamora-Chinchipe: Cordillera del Condor, (**COLOR 5, UL**), without more specific data, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17544* (Holotype: MO; Isotype: JAUM).

This species, apparently endemic in the Cordillera del Condor in southeasternmost Ecuador, is superficially similar to the smaller-flowered *R. teaguei* which occurs not far away on the adjacent, eastern slope of the Andes. Vegetatively the two species are similar, and the flowers of both species are distinguished by a narrowly elliptical synsepal more or less acute at the apex. Basally, the petals of *R. teaguei* are sparsely denticulate, while those of *R. condorensis* are essentially entire. Most distinguishing is the narrow, pandurate lip of *R. condorensis* with fimbriate margins of the epichile. The significantly shorter, broader lip of *R. teaguei* is entire or microscopically cellular-verrucose.

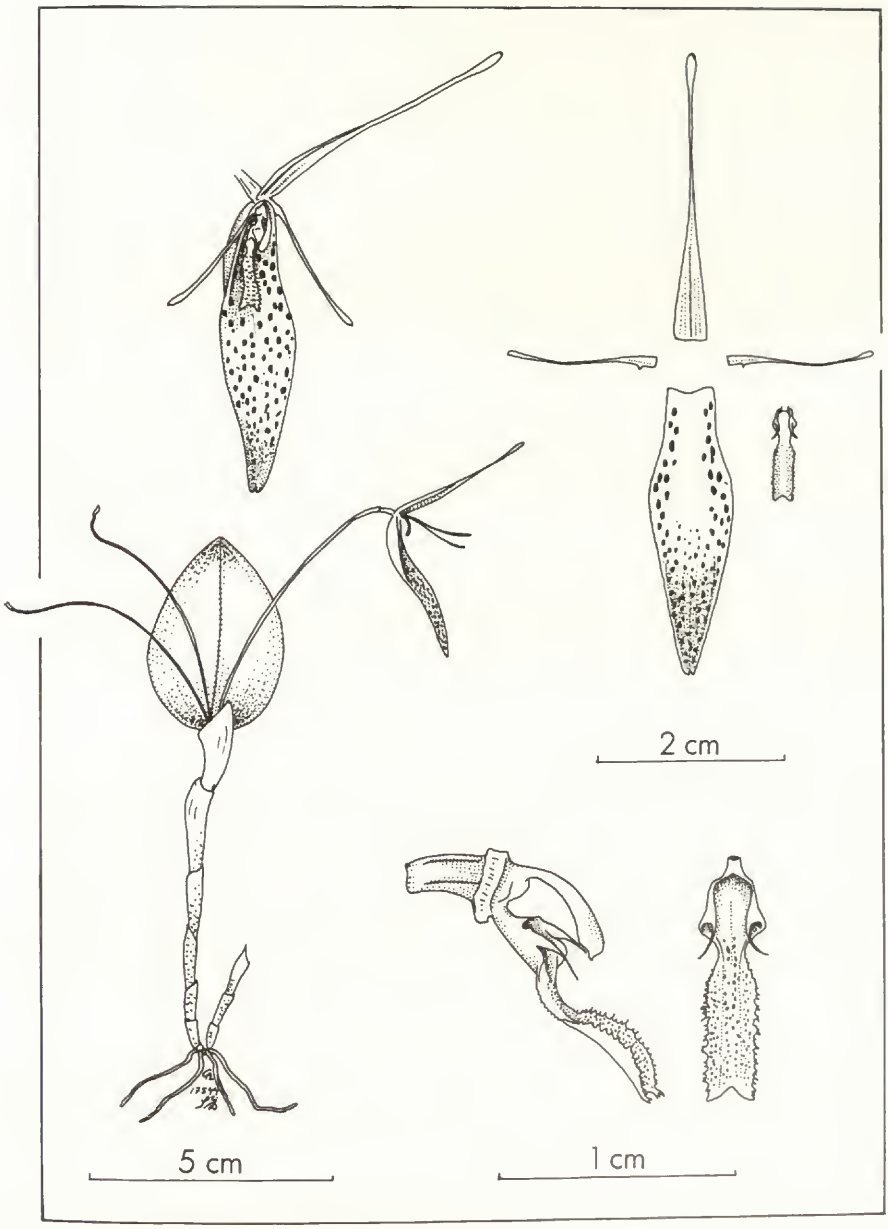


Plate 13. *Restrepia condorensis* Luer & Escobar

Restrepia contorta (Ruiz & Pav.) Luer, comb. nov.

Bas.: *Humboldtia contorta* Ruiz & Pav., Syst. Veg. 235, 1798.
Ety.: From the Latin *contortus*, "contorted," referring to twisted tips of the leaves.

Syn.: *Stelis contorta* (Ruiz & Pav.) Pers., Syn. Pl. 2: 524, 1807.

Syn.: *Restrepia maculata* Lindl., Orchid. Linden. 4, 1846.
Ety.: From the Latin *maculatus*, "spotted," referring to the sheaths and the synsepal.

Syn.: *Restrepia punctulata* Lindl., Folia Orchid. *Restrepia* 2, 1859, *nomen nudum*.
Ety.: From the Latin *punctulatus*, "with dots," referring to the color of the synsepal.

Syn.: *Restrepia pardina* Lem., Ill. Hort. 16: t. 601, 1869.
Ety.: From the Latin *pardinus*, "like a leopard," referring to the spotted synsepal.

Syn.: *Restrepia ecuadorensis* Rolfe, Bull. Misc. Inform. 208, 1892.
Ety.: Named for the country where the species was said to have originated.

Syn.: *Restrepia caucana* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 119, 1920.
Ety.: Named for the department of "Cauca," a large area including southern Colombia and northern Ecuador.

Syn.: *Pleurothallis fimbrilabia* C.Schweinf., Bot. Mus. Leafl. 16: 50, 1953, not *P. ecuadorensis* Schltr.
Ety.: From the Latin *fimbrilabius*, "with a fringed lip," referring to the labellum.

Syn.: *Restrepia apiculata* Luer, Selbyana 7: 126, 1982.
Ety.: From the Latin *apiculatus*, "apiculate," referring to the apex of the lip.

Syn.: *Restrepia maculata* subsp. *ecuadorensis* (Schltr.) Mohr, Leafl. Schltr. Instit. 2: 16, 1996.

Plant small to large, epiphytic, caespitose; roots slender. Ramicauls erect, 4-16 cm long, occasionally prolific, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less spotted or marked transversely with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, subacute, 3.5-7 cm long, 2-4 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-8 cm long; floral bract thin, tubular, 4-8 mm long; pedicel stout, 2-5 mm long, with a short filament; ovary purple, lightly sulcate, 3-5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein dark purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 23-35 mm long, 3-4 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, white, yellow, or light purple, variously veined, dotted or spotted with brown or darker purple, 23-35 mm long, 10-14 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, veined and more or less suffused in purple, narrowly linear-triangular, the margins entire, minutely serrulate, or with 1-2 minute, capillary appendages near the base, attenuated above the middle with the apex clavate-thickened, 14-20 mm long, 1-2 mm wide at the base; **lip** pale green, white, yellowish or light purple, variously suffused, flecked or dotted with red-brown or darker purple, oblong, 8-12 mm long, 3-4 mm wide with the isthmus narrower, the epichile broadly oblong, narrowed in the lower third, microscopically to minutely verrucose with serrulate margins, the apex truncate, retuse, to rarely apiculate, the hypochile suborbicular or subquadrate, concave with thin, erect margins, each side with a thin, attenuated, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 4-6 mm long, the base pedestal-like with a pair of obtuse calli.

The following list of collections contains numerous border-line specimens that have not been, nor can be positively identified. The citations are offered as a guide to where specimens with medium-sized, spotted synsepals and a more or less pandurate, verrucose, denticulate lip are found. Larger-flowered specimens grade into *R. guttulata*; smaller-flowered specimens grade into *R. elegans*.

PERU: Dept. of Huánuco: Muña, ca. 1779, *Ruiz & Pavón s.n.* (Holotype: MA; Isotype: W); Muña, alt. 7000 ft., 23 May 1923, *J. F. Macbride 4018* (AMES); Muña, 4 Mar. 1959, *F. Woytkowski 5203* (AMES, MO, NY), C. Luer illustr. 17922. Dept. of Amazonas: El Progreso, collected by B. Würstle, flowered in cultivation at Spielberg, Germany, 25 Sept. 1985, *C. Luer 11411* (MO); below Pomacochas, flowered in cultivation in Tacoma, WA, by *K. Tokach P-8* (MO); without data, collected by P. Cloes, flowered in cultivation in Hasselt, Belgium, 15 Aug. 1993, *C. Luer 16968* (MO). Dept. of San Martín: Bongará, alt. 1400 m, collected by M. Arias, cultivated at Colomborquídeas, 5 May 1993, *C. Luer 16690* (MO).
ECUADOR: Without collection data, flowered in cultivation by *F. Sander & Co. s.n.* (K, holotype of *R. ecuadorensis*). Prov. of Pichincha: woods of Pichincha, flowered in cultivation by *Schiller s.n.* (K); vicinity of Quito, 26 Nov. 1918, *J. N. Rose & G. Rose 23554* (NY, US). Prov. of Azuay: Río Matadero

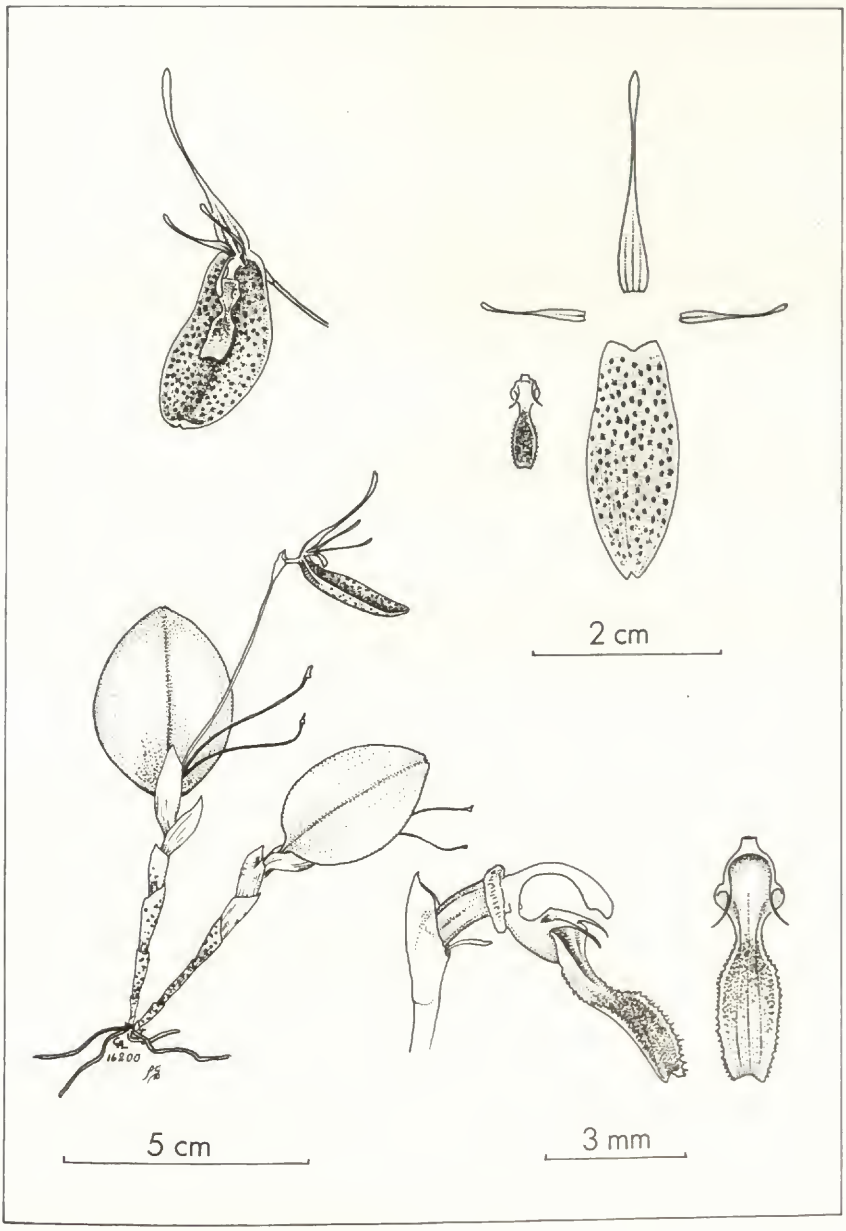
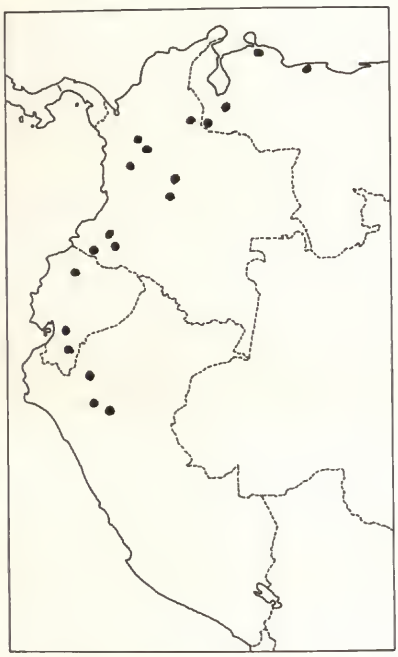


Plate 14. *Restrepia contorta* (Ruiz & Pav.) Luer
(Ecuador)



west of Cuenca, 9,600-10,000 ft., 3 Mar. 1945, *W. H. Camp E-1997* (NY). Prov. of Zamora-Chinchipe: Tapichalaca, above Valladolid, alt. 2200 m, 19 May 1986, *D. D'Alessandro 684* (MO); Cordillera del Condor, Nambija, alt. 1300 m, Nov. 1991, *A. Hirtz 5590* (MO), C. Luer illustr. 16200. Without locality, collected by W. Teague & D. Welisch, July 1975, flowered in cultivation by O. Arango at La Estrella, Colombia, 3 Oct. 1977, *R. Escobar 1653* (SEL, type of *R. apiculata*), C. Luer illustr. 1898.

COLOMBIA: Dept. of Cundinamarca: near Bogotá, Salto de Tequendama, Nov. 1842, *J. Linden 1270* (lectotype of *R. maculata* here designated: K; isolectotypes: BR, W); without specific locality, 1842, *J. Linden 47* (K, as "R. punctulata," not as to Colombia, 29 Dec. 1846, *J. Linden No. 2* as "R. punctulata;" "Bogotá," *H. Karsten s.n.* (W); Soacha, Río Bogotá, El Charquito, above the falls, 30 Sept. 1956, *M. Ospina H. 1* (AMES); Fusagasugá, alt. 2000 m, 17 Dec. 1938, *J. Renz 3609* (Herb. J. Renz); Aguadita, Rio Aguadita Valley, between San Miguel and Fusagasugá, 1800 m, 19 July 1941, *J. Renz 3611* (Herb. J. Renz); Guayabetal, alt. 1700 m, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16667* (MO). Dept. of Norte de Santander (old dept. of Ocaña): Páramo de San Pedro, alt. 3500 m, 1851, *L. Schlim 739 in part* (K); Pamplona, La Baja, 7000-8000 ft., 1847, *L. Schlim 1036* (BR, G, LD, W). Dept. of Santander: Virolín, **(COLOR 4, LR)**, alt. 1900 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16671* (MO). Dept. of Antioquia: Cocorná, alt. 2000 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16672* (MO); Dabeiba, **(COLOR 4, LL)**, alt. 2000 m, collected by H. Angarita, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16670* (MO); Río Caldera, collected by E. Valencia, Nov. 1986, flowered in cultivation at Colomborquídeas, 6 Apr. 1988, *C. Luer 13059* (MO); Munic. of Sonsón, Quebrada Oscura, alt. 2000 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 6 Apr. 1988, *C. Luer 13060* (MO); between Urrao and Betulia, 31 Oct. 1987, *A. E. Brant & J. Betancur 1575* (HUA, MO); Urrao, below Pabón, alt. 1800 m, collected by M. Zapata, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16676* (MO). Dept. of Chocó: Carmen de Atrato, alt. 2000 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16675* (MO). Dept. of Valle del Cauca: between Las Brisas and La Marina, alt. 1730-1850 m, 29 Oct. 1946, *J. Cuatrecasas 22657* (AMES); Lago Calima, **(COLOR 4, UR)**, alt. 1400 m, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16663* (MO). Dept. of Cauca: Without locality, alt. 2000 m, *M. Madero s.n.* (type of *R. caucana*, destroyed at B); Popayán, Hda. La Colonia, **Frontispiece**, collected by Amalia Lehmann de Sarria, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16681* (Neotype of *R. caucana* here designated: MO); west of Popayán between Rio Sucio and Río Piedras, alt. 1800-2000 m, 3 July 1922, *F. W. Pennell 9282* (AMES, NY); Western Cordillera, Río Naya, alt. 1800 m, collected by J. Miranda, 1980, flowered in cultivation 14 Nov. 1982, *C. Luer 8349* (SEL); Dept. of Nariño: above Ricaurte, alt. 1900 m, 6 Aug. 1978, *C. Luer, J. Luer, J. Kuhn & R. Escobar 3169* (SEL).

VENEZUELA: Edo. Aragua: Ricaurte, near Colonia Tovar, alt. 2000 m, 23 Aug 1958, *J. Renz 9163* (Herb. J. Renz). Dist. Fed.: between Junquito and Tovar, alt. 1100-1400 m, 11 July 1969, *J. Renz 9536* (Herb. J. Renz). Edo. Falcon: Sierra de San Luis between Coro and Curimagua, alt. 1200 m, 27 Dec. 1951, *J. Renz 7652* (Herb. J. Renz); Cordillera de la Costa, between Maracai and Choroni, Parque Nacional H. Pittier, alt. 1600 m, 12 Dec. 1953, *J. Renz 8135, 8147* (Herb. J. Renz). Edo. Mérida: Páramo de Portachuela, alt. 2000 m, June 1843, *J. Linden 1481* (Paratypes of *R. maculata*: BM, K, W); Mérida, alt. 7000 ft., 1845, *H. Wagener s.n.* (W). Edo. Táchira: Río Copas Valley, alt. 2100 m, 13 May 1951, *J. Renz 6940* (Herb. J. Renz); about Delicias, way to Regonbalia, alt. 1900 m, 2 Sept. 1951, *J. Renz 7318* (Herb. J. Renz); same locality, 31 Mar. 1951, *J. Renz 7084* (Herb. J. Renz); Páramo Zumbador southwest slope toward San Cristóbal, alt. 2000 m, 4 July 1951, *J. Renz 7167* (Herb. J. Renz); Páramo de Tamá, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 16 May 1993, *C. Luer 16894* (MO).

Restrepia contorta, the first species of the genus to be described, was collected near Muña in Huánuco, Peru, about 1779 by Ruiz and Pavón. First described in the genus *Humboldtia* in 1798, it was transferred to *Stelis* in 1807 by Persoon, where it

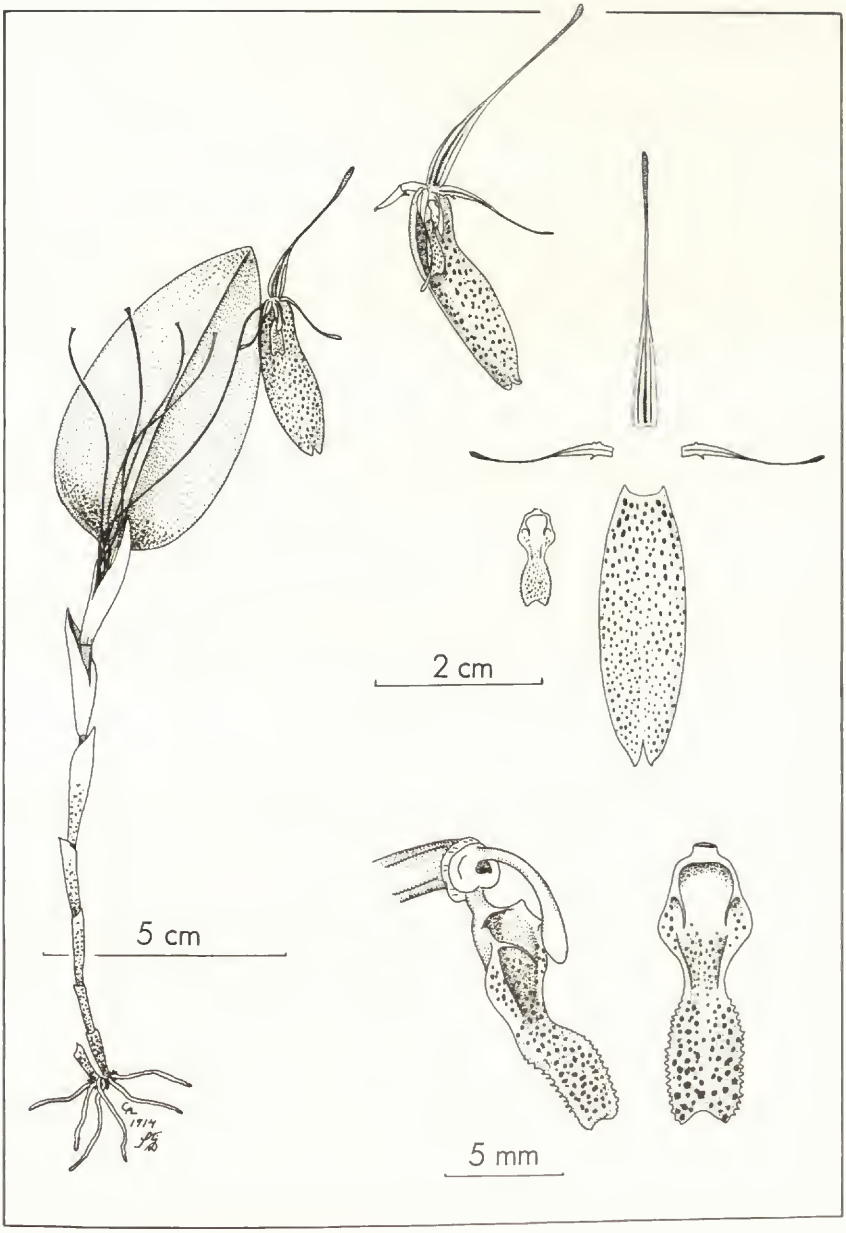


Plate 15. *Restrepia contorta* (Ruiz & Pav.) Luer
(Colombia)

has lain ignored for nearly two centuries. It was presumed to be an unidentified species of *Pleurothallis* by Schweinfurth (1958) in the *Orchids of Peru*, and as a species of *Restrepia* in the supplement (1979).

This species is best treated as a variable, frequent and widely distributed species-complex that has gathered specific epithets from various localities by various authors over the past century. Small-flowered forms grade into *R. elegans* and large-flowered forms grade into *R. guttulata*. Positive identifications of many specimens is not possible.

As presently perceived, *R. contorta* includes Lindley's *R. maculata*, a larger plant with a larger flower with a spotted synsepal. Lindley's illustration of the lip shows a slight constriction below an oblong, slightly denticulate and verrucose blade, or epichile. This variation is somewhere between the lip of *R. contorta* and *R. guttulata*. *Restrepia contorta* also includes Rolfe's Ecuadorian *R. ecuadorensis* and Schlechter's Colombian *R. caucana*.

Vegetatively plants vary from small to large. The ramicauls are clad in loose, imbricating sheaths common to all species of the genus. The lowermost are spotted with black or dark brown. The leaves vary considerably in size and they vary from elliptical to ovate. The slender, flexible peduncles bear the flowers near or beyond the tips of the leaves.

Although varying greatly in color and size, the basic pattern is found in all specimens attributed to the species. The flowers are medium in size to relatively large, with sepals usually between 25 and 35 millimeters long. The dorsal sepal is erect, narrowly ovate, attenuated above with a clavate apex. The synsepal is elliptical, concave toward the base, with the apex more or less subacute to obtuse and shortly bifid. The synsepal is variously spotted, from numerous, diffusely scattered, small dots, to large spots, sparsely scattered to coalescing toward the base. The basic color varies from yellow, orange or tan to rose or purple, and the spots vary from purple to brown.

The petals are slender with a clavate apex. The thin, membranous margins above the base vary from entire to microscopically serrulate, often with a minute, capillary appendage.

The lip is spotted, much the same as the synsepal. It is more or less constricted below the middle which forms an oblong epichile distinct from the subquadrate, concave hypochile. The margins posses the minute, delicate, uncinate processes classical for the genus. The blade, or epichile, is flat and more or less truncate. The margins are variously denticulate to fringed. The surface is variably verrucose. The width of the epichile above the isthmus also varies. Several variations approach the transverse apex of *R. pandurata*, which is really nothing more than an extreme form of the blade. Large flowers with a large oblong lip that is barely if at all constricted meet the criteria for *R. guttulata*.

Several local variations are recognizable, but the morphology of the flowers does not vary sufficiently to permit recognition at the specific level. *Restrepia apiculata* was described because of an apiculate apex of a truncate lip, but that now seems insufficient to maintain the variation at the specific level. In cultivation at Colomborquídeas are several noteworthy variations. One known as "puntillosa" has a yellow synsepal diffusely dotted with purple-brown. Another known as "roseola" is similar but with purple dots on rose.

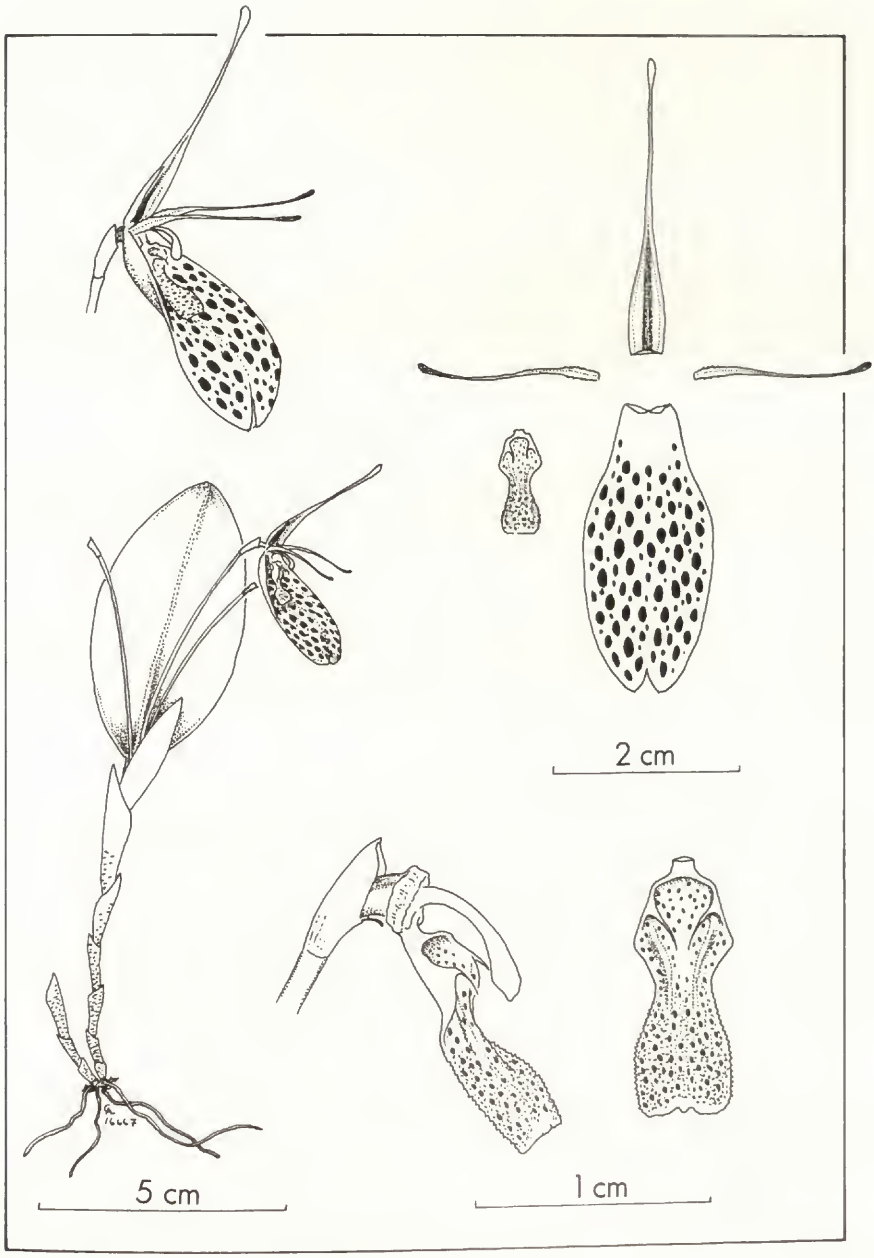


Plate 16. *Restrepia contorta* (Ruiz & Pav.) Luer
(Colombia)

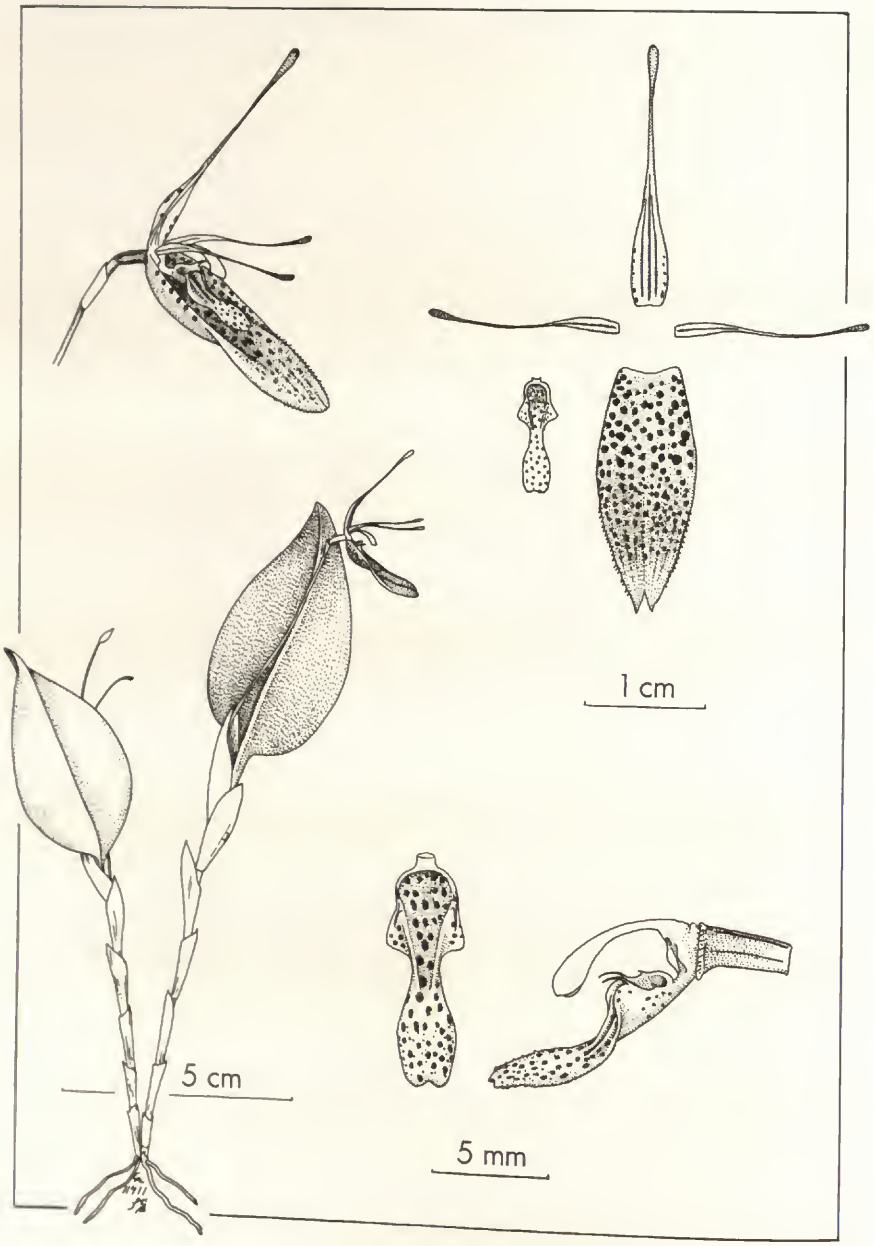


Plate 17. *Restrepia contorta* (Ruiz & Pav.) Luer
(Peru)

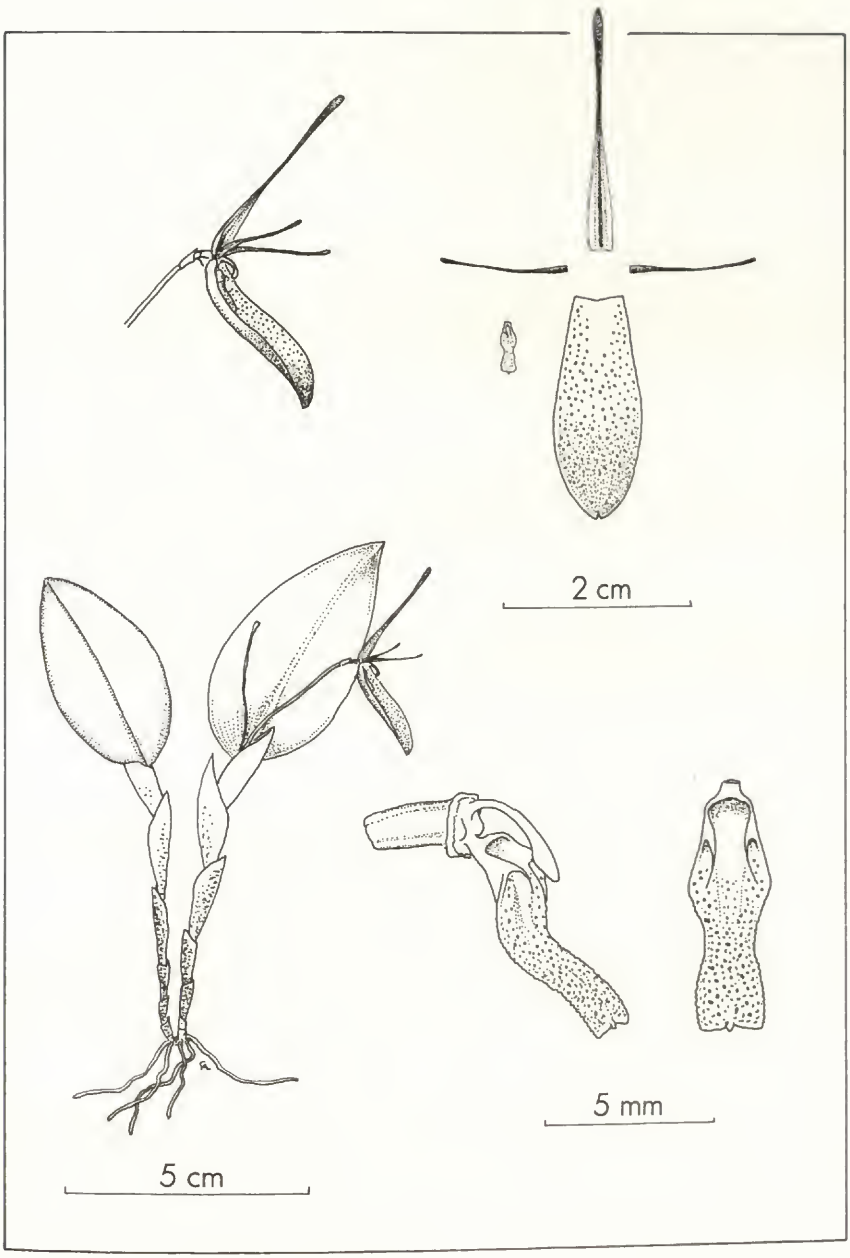


Plate 18. *Restrepia contorta* (Ruiz & Pav.) Luer
(Ecuador, *Restrepia apiculata*)

Restrepia cuprea Luer & Escobar, Orquideología 20: 130, 1996.

Ety.: From the Latin *cupreus*, "copper-colored," referring to the color of the synsepal.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 5-8 cm long, enclosed by 6-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lower sheaths dotted with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, subacute, 5-7 cm long, 2-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-5 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 1.5 mm long, with a filament 3 mm long; ovary purple, lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent yellow-white with the midvein purple-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 29-30 mm long, 3.75 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, diffusely suffused with orange-brown (coppery), yellow at the base, with purple spots along the margins below the middle, purple, 28-30 mm long, 13 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, with the midvein and margins purple, narrowly linear-triangular, the margins minutely and sparsely denticulate below the middle, attenuated above the middle with the apex clavate-thickened, 23 mm long, 2 mm wide above the base; **lip** brown, lightly dotted with darker brown lateral to the carinae below the middle, oblong, 11 mm long, 4.5 mm wide, the epichile broadly oblong, microscopically cellular-pubescent or cellular echinate, with microscopically serrulate margins, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a small, capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white with a dark purple spot at the base, slender, clavate, 6 mm long, the base yellow, pedestal-like, with a pair of obtuse calli.

COLOMBIA: Dept. of Antioquia: Munic. of Cocorná, (**COLOR 5, LL**, usual color-form, **COLOR 5, LR**, orange color-form), Quebrada La Hundida, alt. 1700 m, collected by L. C. Vieira, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16677* (Holotype: MO); same collection, flowered in cultivation at Colomborquídeas, 22 Nov. 1981, *C. Luer 6732* (SEL); along a quebrada to Río Cocomá, alt. 1600 m, 24 Apr. 1983, *C. Luer, J. Luer, R. Escobar, M. Webb, A. Pridgeon & L. Vieira 8797* (SEL).

Restrepia cuprea is known from only one valley on the eastern slopes of the Central Cordillera of Colombia. It is most closely related to *R. guttulata*, and could be treated as just another color form, but the plants found in this locality appear distinct with a shorter, stouter habit, shorter peduncles, and distinctively colored flowers, neither wholly striped nor spotted. Except for a few purple spots along the margin below the middle and yellow at the base, the synsepal of most clones is a solid, rich, coppery color, like no other seen in the genus. The synsepals of some clones are deeper copper, and the color of the synsepal of other clones is much paler approaching some shade of yellow. A careful inspection reveals that the "solid" color is actually made of coalescing stripes.

The lip is broad, oblong and unspotted except for a few dots on the sides below the middle. The blade is minutely scabrous and denticulate. *Restrepia cuprea* is pictured in *Native Colombian Orchids* (Escobar, 1992).

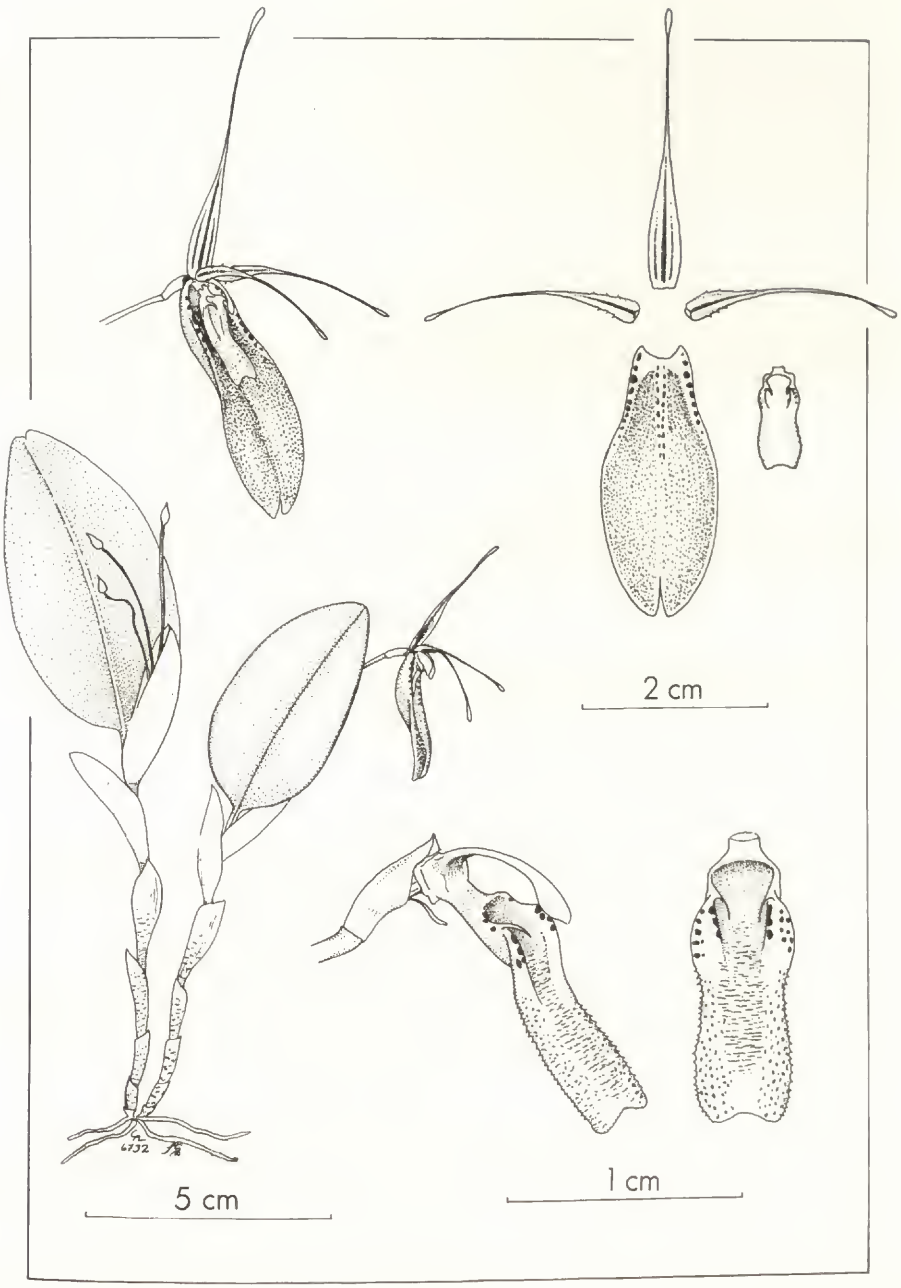


Plate 19. *Restrepia cuprea* Luer & Escobar

Restrepia cymbula Luer & Escobar, Orquideología 20: 133, 1996.

Ety.: From the Latin *cymbula*, "a small boat," referring to the boat-shaped synsepal.

Plant small, epiphytic, densely caespitose; roots slender. **Ramicauls** erect, slender, 2.5-3 cm long, enclosed by 5-6 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, transversely dotted with black. **Leaf** erect, coriaceous, mottled with purple beneath, elliptical, obtuse, 2-3.5 cm long, 1.5-2 cm wide, the base rounded, sessile. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 1-2 cm long; floral bract thin, oblique, 3.5-4 mm long; pedicel stout, 1.5 mm long, with a minute filament 1 mm long; ovary 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent rose with the midvein red, flanked a thin red vein, narrowly ovate in the lower fourth, attenuated above with the apex clavate-thickened, 16 mm long, 2.5 mm wide above the base, 5-veined, the lateral sepals connate to the apex into a cymbiform lamina, rose, diffusely spotted with red, 15 mm long, 6 mm wide unexpanded, the apex subacute, minutely bifid; **petals** membranous, translucent rose with the midvein red, narrowly ovate in the lower fourth, the margins with 1-2 minute processes above the base, attenuated above to the clavate-thickened apex, 9.5 mm long, 1 mm wide above the base; **lip** rose, dotted with red-purple, oblong-pandurate, 7.5 mm long, 2 mm wide, the epichile oblong-pandurate, constricted below the middle, lightly verrucose, the margins minutely erose, the apex conspicuously incised, the hypochile subquadrate, concave with thin, erect margins, each side with a subacute lobule at the base and an uncinate, capillary process, the disc with a low carina extending forward from the base of each process onto the epichile, becoming verrucose on the blade, the base truncate, connected to the column-foot by a thick, cylindrical neck; **column** greenish white, slender, clavate, 3.5 mm long, the base yellow, pedestal-like with a pair of obtuse calli.

ECUADOR: without locality, **(COLOR 5, UR)**, received from Mario Portilla, flowered in cultivation at Colomborquídeas, Jan. 1993, *R. Escobar 5052* (Holotype: MO), C. Luer illustr 16581; same collection, flowered in cultivation May 1995, *C. Luer s.n.* (MO).

This little species without collection data was obtained in 1992 by Colomborquídeas Ltd. above Medellín, Colombia, from Mario Portilla in Ecuador. Unfortunately, the only plant known was lost in cultivation in 1996.

Restrepia cymbula is easily recognized by the small habit and a small flower with a boat-shaped, red-spotted synsepal. The subpandurate lip is lightly verrucose and conspicuously incised at the apex.

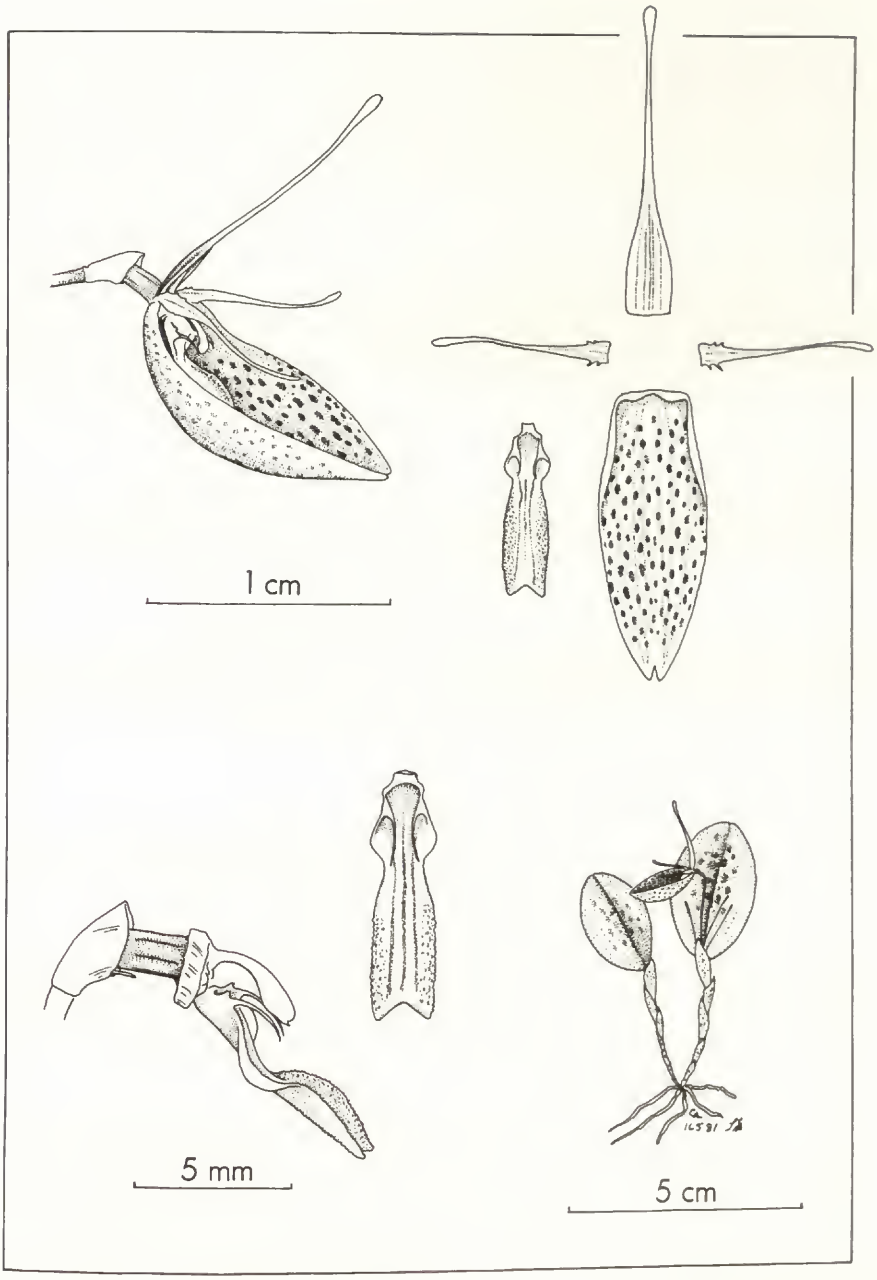


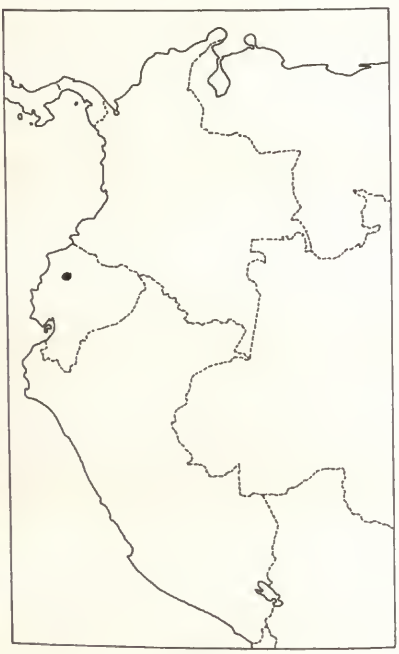
Plate 20. *Restrepia cymbula* Luer & Escobar

Restrepia dodsonii Luer, Phytologia 46: 382, 1980.

Ety.: Named in honor of Calaway H. Dodson who discovered this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 1.5-5 cm long, enclosed by 4-6 thin, whitish, loose, oblique, compressed, more or less imbricating sheaths. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, acute to subacute, 2-4 cm long, 1-2.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, 2-4 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 2-3 mm long, with a short filament; ovary lightly sulcate, 2-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent rosy white, 5-veined with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, orange, 19-24 mm long, 2 mm wide above the base, the lateral sepals rose, suffused and dotted in rows with dark purple, connate to near the apex into a concave, elliptical lamina, 17-23 mm long, 7-8 mm wide expanded, the apex obtuse, minutely bifid, microscopically pubescent within; **petals** membranous, translucent white with a purple spot above the base, narrowly linear-triangular, the margins with 1 or 2 minute teeth near the base, attenuated above the middle with the apex minutely clavate-thickened, 11-13 mm long, 0.75 mm wide; **lip** dull cream, dotted with purple, narrowly oblong-subpandurate, 6 mm long, 1 mm wide, the epichile elliptical, verrucose-spiculate with spiculate-serrate margins, the apex obtuse to narrowly rounded, the hypochile subquadrate, concave with thin, erect margins, each side with a minute, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, suffused with rose, slender, clavate, 3 mm long, the base pedestal-like.

ECUADOR: Prov. of Pichincha: epiphytic in citrus trees west of Tandapi, (**COLOR 6, UL**), alt. 1500 m, 16 Aug. 1975, *C. Luer, G. Luer & S. Wilhelm 538* (Holotype: SEL); west slope of Corazón, Río Pilaton, alt. 1200-1800 m, 13 Jan. 1881, *F. C. Lehmann 335* (W); east of Tandapi, alt. 1700 m, 2 Feb. 1978, *C. Luer, J. Luer & A. Hirtz 2445* (SEL); near the silver mine above Toachi, alt. 1500 m, 14 Mar. 1982, *C. Luer, A. Hirtz & S. Dalström 7358* (SEL); Quito-Santo Domingo road, alt. 4500 ft., 1 Aug, 1980, *R. Sauleda et al. 3859* (MO, USF); west of Tandapi, alt. 1200 m, *C. H. Dodson 8641* (SEL); same area, alt. 1450 m, 30 Sept. 1984, *C. H. Dodson & P. Dodson 15332* (MO); same area, alt. 1400 m, Apr. 1984, *A. Hirtz 1711* (MO).



This species is locally abundant at medium altitudes on the western slopes of the Andes in central Ecuador where it was first collected by Lehmann in the nineteenth century. Once abundant in the small trees along the Río Toachi where it was familiar to Dodson, it is now rare.

Restrepia dodsonii is distinguished by the small habit; medium-sized, densely red-purple-spotted flowers, the spots usually arranged in close rows; a prominent, purple spot at the base of the petals; and a narrow, spiculate-verrucose blade of the lip with an obtuse apex. It is closely related to *R. trichoglossa*, perhaps being little more than a distinctive color-form, best distinguished by the intense spotting of the sepals and a very narrowly oblong, spiculate blade of the lip.

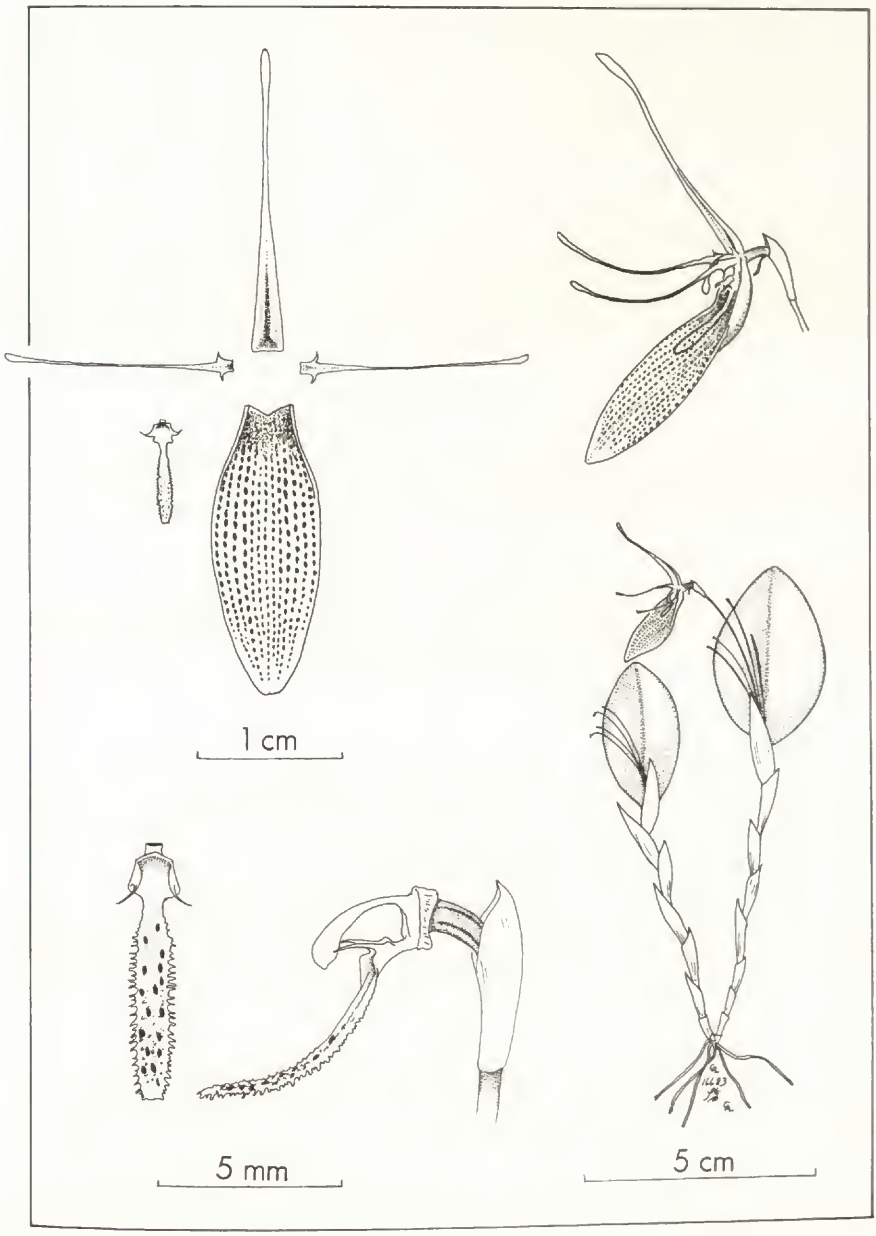


Plate 21. *Restrepia dodsonii* Luer

Restrepia echinata Luer & Escobar, Orquideología 20: 135, 1996.

Ety.: From the Latin *echinatus*, "echinate," referring to the bristly epichile of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 cm long, enclosed by 3-6 loose, compressed, more or less spotted, more or less imbricating sheaths. **Leaf** erect, yellow-green, coriaceous, elliptical-ovate, subacute to obtuse, 3.5-4 cm long, 2-3 cm wide, the base broadly cuneate, contracted into a twisted petiole ca. 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 2.5-3.5 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 3-5 mm long, with a short filament; ovary lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple-brown, narrowly ovate in the lower third, attenuated above with the apex clavate-thickened, 11-17 mm long, 2-2.5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, obovate, shortly bifid lamina, light yellow, heavily spotted with brown or purple, the spots large and coalescing below the middle, disappearing above the apex, 11-17 mm long, 6-9 mm wide, multiple-veined, the apices obtuse; **petals** membranous, suffused with purple, narrowly linear-ovate, the margins with 1-2 capillary appendages above the base, attenuated above the middle with the apex clavate-thickened, 7.5-11 mm long, 1 mm wide above the base; **lip** yellow or rose, spotted with purple, subpandurate, 4.5-6 mm long, 2-2.5 mm wide, the epichile elliptical, truncate, coarsely echinate, fimbriate, the hypochile subquadrate, with abrupt, subacute, marginal angles just below the isthmus, concave with thin, erect margins toward the base, each side with a thin, uncinate process, the disc with a pair of carinae extending forward from the sides of the hypochile onto the epichile, the base subtruncate, connected to the column-foot by a short, thick neck; **column** greenish white, slender, clavate, 3 mm long, the base pedestal-like with a pair of small, obtuse calli.

COLOMBIA: Dept. of Norte de Santander: Sardinata, between Abrigo and Sardinata, (**COLOR 6, UR**), alt. 1730 m, collected by Escobar, J. and C. Luer, 12 Nov. 1981, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16660* (Holotype: MO). PERU: Dept. of Junín: Satipo, Kivinaki, north side of Perene River, alt. 1100 m, 15 Mar. 1992, *O. del Castro ex Bennett 5491* (USM). Without locality, obtained by A. Hirtz from M. Arias, flowered in cultivation in Quito, 1995, by *A. Hirtz 6221* (MO), C. Luer illustr. 17745.

This species is closely related to *R. elegans*. Vegetatively the two taxa are similar, but the leaves of *R. echinata* are more yellow-green. The flowers are also similar, but the synsepals of *R. echinata* are heavily spotted below the middle. However, the morphology of the lip easily distinguishes *R. echinata*. The lip is subpandurate with the isthmus comparatively broad with the margins below the isthmus dilated into subacute angles. As in all species the margins of the hypochile below the angles are provided with short, uncinate processes. Most remarkable is the broad, thick, ovoid, fringed epichile that is echinate, more or less in three longitudinal rows. The blade of the lip of *R. elegans* is only minutely denticulate-verrucose, often smooth to the naked eye.

Restrepia echinata is known from the Eastern Cordillera of Colombia and northern Peru. Although undoubtedly occurring in intervening Ecuador, it has not yet been found there.

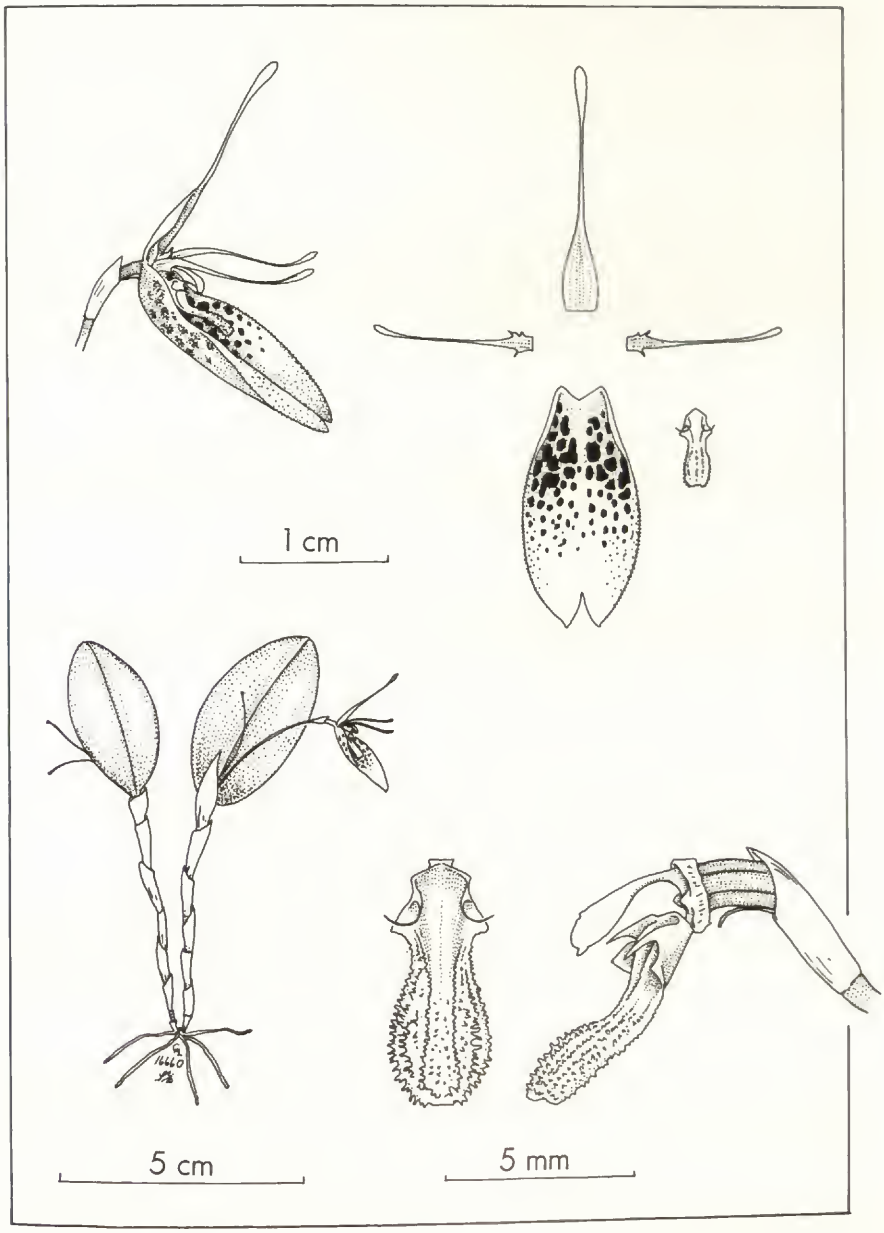


Plate 22. *Restrepia echinata* Luer & Escobar

Restrepia echo Luer & Escobar, Orquideología 20: 138, 1996.

Ety.: Named for the nymph Echo, suggesting an echoing of both *R. aristulifera* and *R. muscifera*.

Plant medium in size, epiphytic, caespitose; roots slender. **Ramicauls** erect, 5-10 cm long, enclosed by 6-9 thin, whitish, loose, compressed, densely spotted, more or less imbricating sheaths. **Leaf** erect, thickly coriaceous, suffused with purple beneath, ovate, acute, 4-6 cm long, 1.5-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 4-5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle low along the back of the leaf; peduncle slender, 7-12 mm long; floral bract thin, tubular, 5 mm long; pedicel 5 mm long, with a short filament; ovary purple, arcuate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, minutely spotted with red-purple, narrowly triangular below the middle, attenuated above the middle with the apex clavate-thickened, 13 mm long, 2 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into an obovate, minutely bifid lamina, shallowly concave toward the base, convex above the base, white or rosy white, diffusely spotted with purple, 11-13 mm long, 8-9 mm wide expanded, the apices rounded; **petals** translucent, narrowly linear, dilated toward the base with the margins microscopically denticulate, attenuated above the middle with the apex minimally clavate-thickened, 10 mm long, 0.2 mm wide, 0.8 mm wide at base; **lip** rosy white, diffusely dotted with purple, elliptical, rounded at the apex, 4.5-5 mm long, 2.5 mm wide, the epichile microscopically verrucose, the hypochile concave with thin, erect margins, each side denticulate a capillary, uncinate processes, the disc with a pair of low carinae extending forward from the base of the processes onto the epichile, the base rounded, connected to the column-foot by a broad, rigid, cylindrical neck; **column** white, slender, clavate, 3 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Antioquia: Santo Domingo, (**COLOR 6, LL**) alt. 1900-2000 m, collected by R. Escobar, C. Luer & E. Valencia, 18 Sept. 1986, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16702* (Holotype: JAUM; Isotype: MO); Urrao, alt. 2000 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16700* (MO); without more specific locality, collected by E. Valencia, Sept. 1992, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17606* (JAUM: MO); without locality, collected by J. Kuhn, cultivated by Ann Jesup #21, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16703* (MO).

This species is very closely related to the number of forms grouped together in *R. muscifera*. Although spots on the sheaths of ramicauls may not be considered to be consistent in a species, all the sheaths of known specimens of *R. echo* are densely spotted, while only the lowermost sheaths of the closely allied *R. muscifera* are dotted. *Restrepia echo* is found within the distribution of *R. muscifera* in both the western and central cordilleras of Colombia, but populations remain separate.

Similar to *R. muscifera*, short peduncles bear the flower against the back of the base of the leaf with the ovary acutely arcuate so that the flower faces outward. The dorsal sepal is clavate, but the petals are barely minimally clubbed. Toward the base of the petals the margins are minutely and variously toothed. The margins are entire in most specimens of *R. muscifera* examined. The synsepal is obovate and diffusely covered by small spots.

The lip is elliptical and proportionately short, less than half the length of the synsepal in the natural position. As in *R. muscifera*, the epichile is minutely verrucose and rounded at the apex. The margins of both sides of the hypochile of *R. echo* are minutely denticulate in addition to the pair of minute, hairlike processes that curves forward.

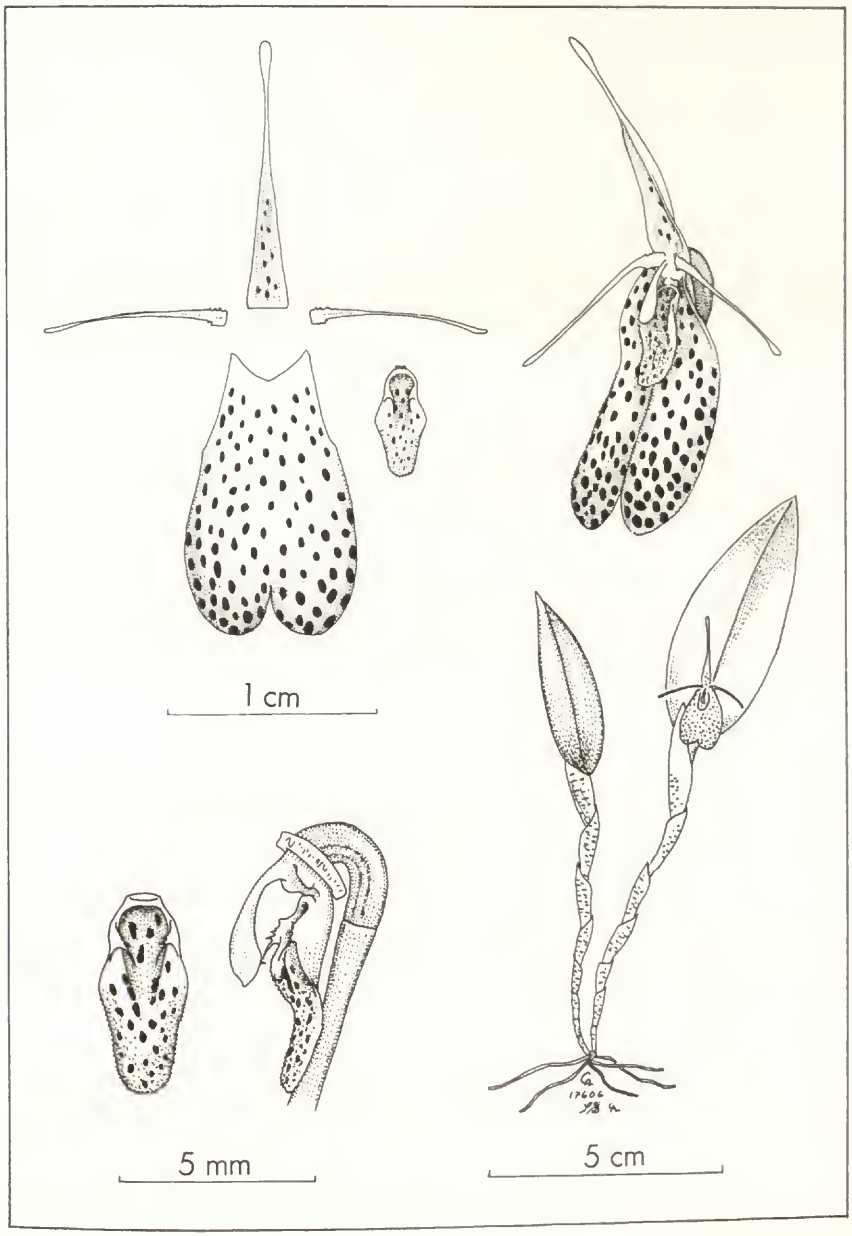


Plate 23. *Restrepia echo* Luer & Escobar

Restrepia elegans H. Karst., Allg. Gartenzeitung 15: 202, 1847.

Ety.: From the Latin *elegans*, "elegant," referring to the pretty aspects of the plant.

Syn.: *Restrepia erythroxantha* Rchb.f., Linnaea 22: 817, 1849.
Ety.: From the Greek *erythroxanthos*, "red-yellow," referring to colors of the flowers.

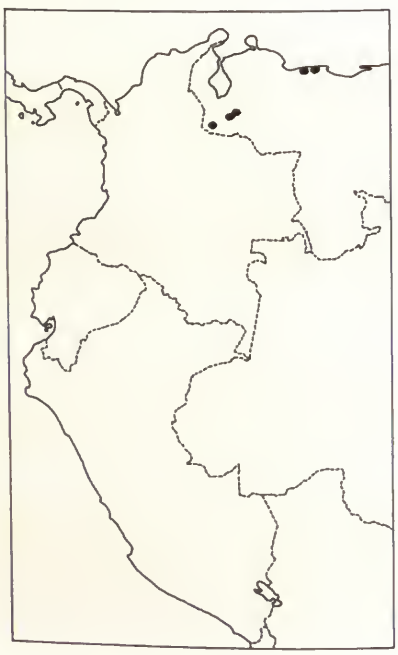
Syn.: *Restrepia leopardina* hort., Orchid Review 7: 94, 1899, *nomen nudum*.
Ety.: From the Latin *leopardinus*, "like a leopard," referring to the spotted synsepal.

Syn.: *Restrepia leopardina* var. *rosea* hort., Orchid Review 12: 211, 1914.
Ety.: From the Latin *roseus*, "rosy," referring to the color of the flower.

Syn.: *Restrepia antennifera* subsp. *erythroxantha* (Rchb.f.) Mohr, Leafl. Schltr. Instit. 2: 13, 1996.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-8 cm long, enclosed by 5-7 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less spotted with black on the lower sheaths. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, acute, subacute to obtuse, 3-6 cm long, 1.5-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-5 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 2-3 mm long, with a short filament; ovary lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein deep purple to purple-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 20-24 mm long, 2.5-3 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, yellowish, variously dotted or spotted with brown or purple-brown, 18-22 mm long, 10-12 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, veined and more or less suffused in brown or purple, narrowly linear-triangular, the margins smooth to microscopically erose, attenuated above the middle with the apex clavate-thickened, 12-14 mm long, 1-1.5 mm wide at the base; **lip** yellow to orange-brown, spotted with purple-brown, oblong, obscurely to slightly dilated below a slight narrowing below the middle, 7-8 mm long, 2-3 mm wide, the epichile oblong, minutely verrucose with minutely serrate margins, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, with obtuse marginal angles below the isthmus, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 4-5 mm long, the base pedestal-like with a pair of obtuse, yellowish calli.

VENEZUELA: Dist. Fed.: "Caracas," on the mossy bark of trees, alt. 5000-6000 ft., *H. Karsten, s.n.* (Lectotype: W; Isotype: K); Colonia Tovar, 1846, *Moritz 858* (W, type of *R. erythroxantha*; isotype: G). Edo. Aragua: near Colonia Tovar, 1854-55, *A. Fendler 1485* (AMES, BR, G, K, MO, as *R. lansbergii*); near Colonia Tovar, alt. 1800 m, collected by W. Rauh, Feb. 1984, flowered in cultivation at the Heidelberg Botanical Garden, 28 Aug. 1989, *W. Rauh 64696* (MO); between Junquito and Colonia Tovar, Nov. 1955, *G. C. K. Dunsterville illustr. 318*; same locality, alt. 6,000-7,000 ft., 12 Aug. 1963, *G. C. K. Dunsterville 318* (K); received from Paul Moore, (**COLOR 6, LR**), flowered by A. Jesup #15, *C. Luer 16657* (MO); "Dolores," *G. Bergold 13* (MO). Edo. Mérida: Cerro San Isidro above Carbonera, alt. 2430-2745 m, 22 Apr. 1944, *J. A. Steyermark 56037* (AMES). Edo. Táchira: between Mulera and Rubio, alt. 1400 m, 11 July 1951 *J. Renz 7134* (Herb. J. Renz); Cerro de la Mina, near Sta. Ana, alt. 1500 m, Sept. 1972, *G. C. K. Dunsterville illustr. 1244*. Without collection data, flowered in cultivation in Liége, Belgium, 10 July 1884, by *L. Jacob-Makoy s.n.* (W, type of *R. leopardina*); received from Moore, Glasnevin, flowered in cultivation at Kew (K, as *R. leopardina*); without locality, flowered in cultivation by B. Würstle at Spielberg, Germany, 12 Sept. 1982, *C, Luer 8138* (SEL).



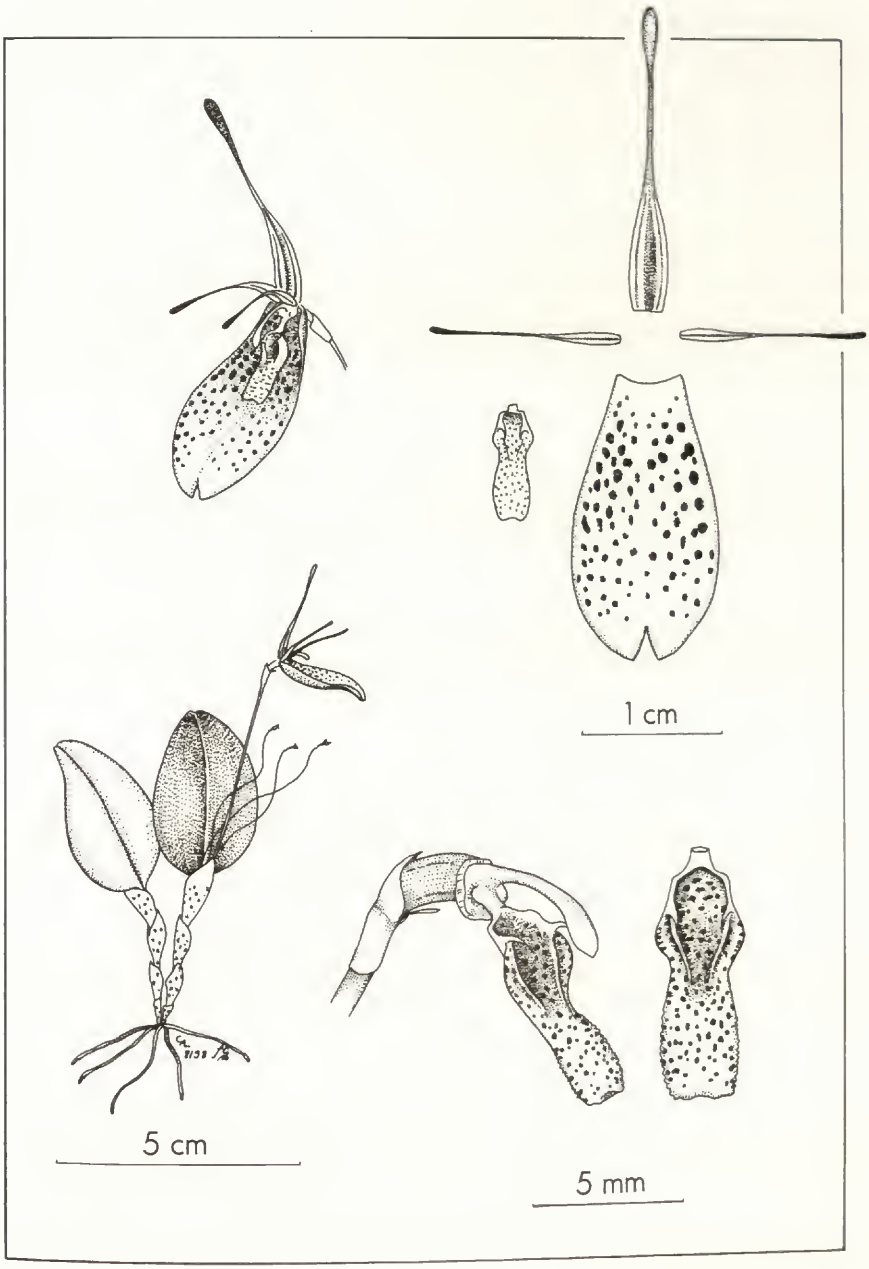


Plate 24. *Restrepia elegans* H.Karst.
(Venezuela)

Restrepia elegans was described by Karsten in 1847 from a collection from coastal Venezuela. The synsepal was described as being dotted with red as supported by an accurate accompanying watercolor painting. Only a sketch of the floral parts showing the sepals about 22 millimeters long and a subpandurate lip with a denticulate blade is present on the type-sheet; there is no flower. No plant material has been conserved at W, but a small fragment is present at K. The species is nicely illustrated in Curtis' *Botanical Magazine* t. 5966 of 1872, although the basic color of the synsepal is usually a darker yellow or yellow-orange, or even purple.

Restrepia elegans occurs frequently in the coastal mountains of Venezuela, and through the Andes of Mérida and Táchira. It is similar to both *R. lansbergii* and *R. wageneri*, all three with overlapping distributions. *Restrepia lansbergii* is best distinguished by the smaller flowers with a usually obovate synsepal, and *R. wageneri* is easily distinguished by the small, yellow, brown-striped synsepal.

In the original description of *R. erythroxantha* in 1851, Reichenbach cited a collection by Moritz from coastal Venezuela near Colonia Tovar. The synsepal of the medium-sized flower (sepals 25 mm long) of the small plant appears in the dry state to have been spotted with dark purple. The description and illustration in *Xenia Orchidacea* in 1854, pl. 60, fig. 2 identified as *R. erythroxantha* was made from a collection and watercolor painting by Wagener made near Mérida. The synsepal was described as being egg yolk-yellow (*dottergelb*). This substitution obviously has mislead subsequent authors, the true *R. erythroxantha* being synonymous with the smaller *R. elegans* with spotted synsepal. The substituted species is described herein as *R. jesupiana.*

Restrepia elegans is characterized by the small to medium-sized habit with small to medium-sized flowers. The synsepal is yellowish to whitish and diffusely spotted with brown or purple, sometimes with the spots coalescing below the middle. Basically the flowers are very similar to those of the widely distributed and variable *R. contorta*, differing mostly by the smaller size. A century and a half ago, Lindley already had declared that *R. elegans* was little more than a small form of his *R. maculata*. The oblong blade of the subpandurate lip is minutely serrulate and verrucose, and variously spotted, usually in darker colors than the synsepal.

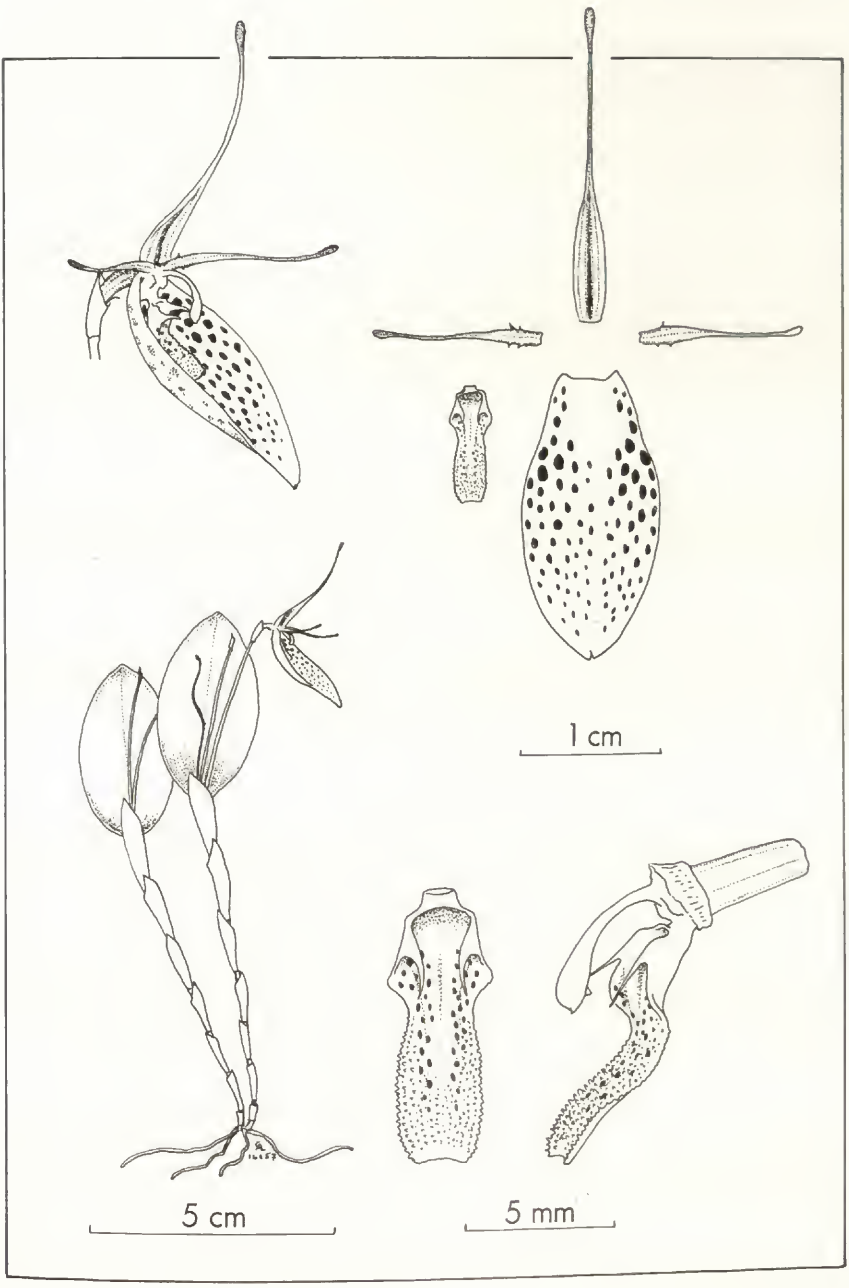


Plate 25. *Restrepia elegans* H.Karst.
(Venezuela)

Restrepia ephippium Luer & Hirtz, Orquideología 20: 141, 1996.

Ety.: From the Greek *ephippion*, "a saddle," referring to the synsepal with deflexed sides.

Plant medium in size, epiphytic, caespitose; roots slender. **Ramicauls** erect, 3-14 cm long, enclosed by 6-8 thin, whitish, loose, compressed, imbricating sheaths, the lower sheaths lightly dotted with black. **Leaf** erect, coriaceous, ovate, subacute to obtuse, 4-7 cm long, 2.5-3.5 cm wide, the base rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 6-9 cm long; floral bract thin, tubular, 6-7 mm long; pedicel stout, 3 mm long, with a short filament; ovary 4-5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the midvein red-purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 26 mm long, 3.75 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into an elliptical lamina, shallowly concave at the base, with the sides deflexed above the middle, rose, striped with purple below the middle, with small rose-purple spots above the middle disappearing at the apex, 26 mm long, 11.5 mm wide expanded, 14-veined, the apex obtuse, minutely bifid; **petals** membranous, translucent, with the midvein and margins suffused with purple, narrowly linear-ovate, with a distinct, acute process on either side above the base, attenuated above the middle with the apex clavate-thickened, 15 mm long, 2 mm wide above the base; **lip** light rose below the middle with rose spots, yellow above the middle with rose spots, subpandurate, 10.5 mm long, 4 mm wide, the epichile ovate, longitudinally convex, subretuse, glabrous, the hypochile subquadrate, concave with thin, erect margins, each side with a short, capillary, uncinate processes, the disc the base rounded, connected to the column-foot by a broad, thick, rigid, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of obtuse calli.

ECUADOR: Prov. of Imbabura: epiphytic in wet forest south of Lita, (**COLOR 7, UL**), alt. ca. 1200 m, collected Jan. 1987 by C. Luer, J. Luer, A. Hirtz et al., flowered in cultivation by A. & P. Jesup in Bristol, CT, 26 Apr. 1987, *C. Luer 12840* (Holotype: MO); along road to Buenos Aires, alt. 1800 m, Nov. 1994, *W. Teague 241* (MO).

Although superficially not particularly remarkable, an unusual combination of minor features sets this species apart. It is of average size with long peduncles and the flowers are of average size. The elliptical synsepal, slightly concave and striped with purple in the lower third, is convex and spotted with purple on deflexed sides above the middle. The sides are deflexed to create a longitudinal, central wedge or angle of about 90° along which the longitudinally convex lip rests. Prominent capillary processes are present near the bases of the petals. The lip is spotted, glabrous and oblong-subpandurate with a retuse apex that fits like a saddle over the longitudinal, midline angle of the synsepal.

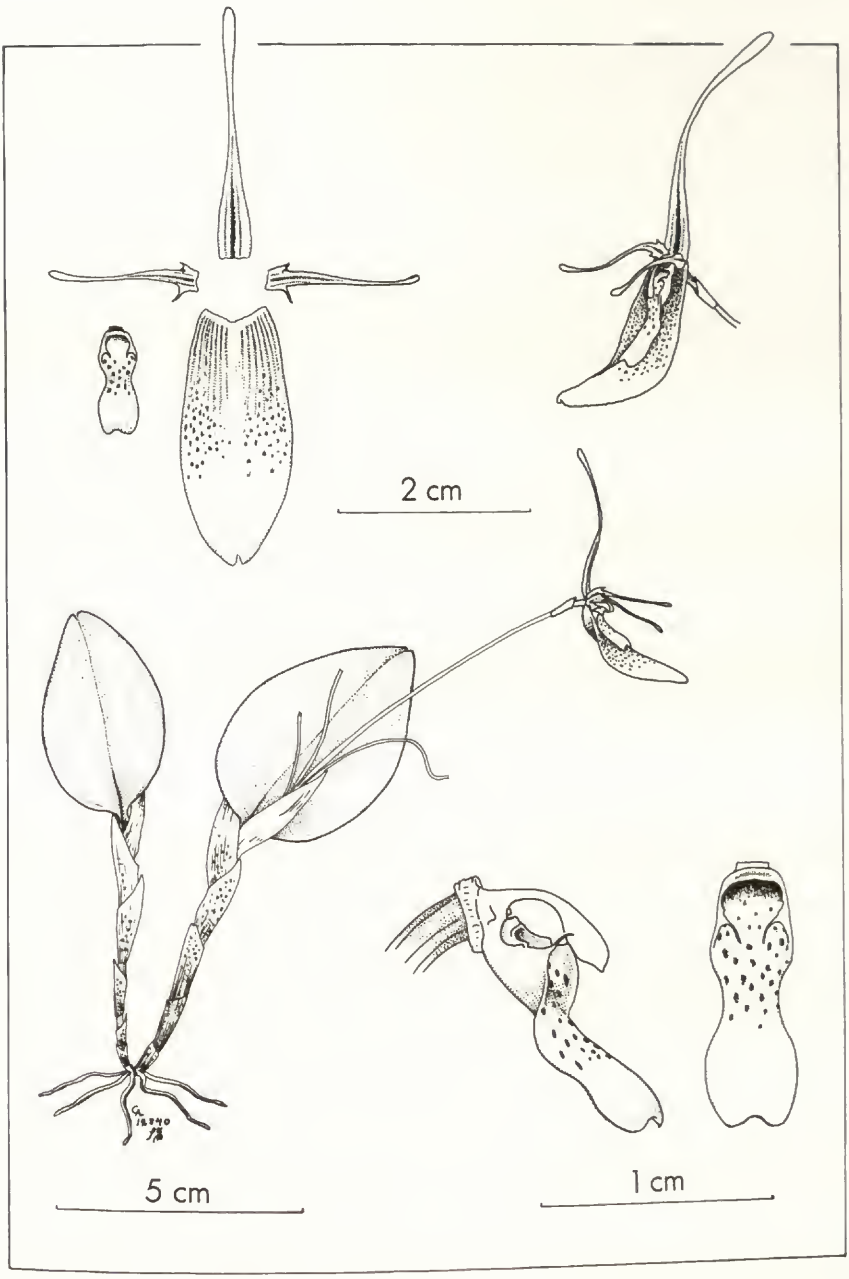


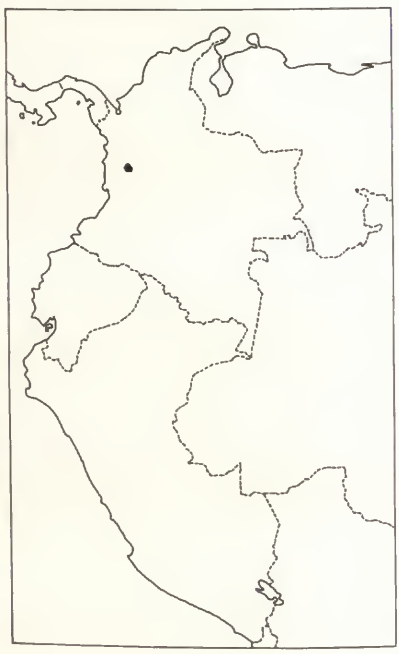
Plate 26. *Restrepia ephippium* Luer & Hirtz

Restrepia escobariana Luer, Orquideología 20: 144, 1996.

Ety.: Named in honor of Rodrigo Escobar, one of the foremost authorities on the genus.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 cm long, enclosed by 5-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost lightly spotted. **Leaf** erect, thickly coriaceous, subconduplicate, narrowly elliptical, acute, 2.5-3 cm long, 1-1.2 cm wide, the base cuneate into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-4 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 1.5 mm long, with a filament ca. 2 mm long; ovary lightly sulcate, 2.5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein rose, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 18 mm long, 2.5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, pale rose, lightly spotted below the middle in rows with darker rose, 18 mm long, 8 mm wide expanded, multiple-veined, the apex subacute, minutely bifid; **petals** membranous, translucent white, narrowly linear-ovate below the middle, the margins smooth, attenuated above the middle with the apex slightly clavate-thickened, 13 mm long, 0.9 mm wide above the base; **lip** yellow, dotted with purple, 6 mm long, 2.3 mm wide, the blade oblong, wider than the hypochile, the epichile convex with the sides slightly deflexed, microscopically verrucose-denticulate, the apex rounded-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, with obtuse marginal angles below the processes, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the apex rounded, retuse, the base connected to the column-foot by a thick, rigid, cylindrical neck; **column** white, slender, clavate, 3.5 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Risaralda: forest above Pueblo Rico, (**COLOR 7, UR**), alt. ca. 2000 m, collected by E. Valencia, Feb. 1987, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16656* (Holotype: JAUM: Isotype: MO).



This species is apparently endemic in the Central Cordillera of Colombia where it has been collected but once. It is similar to *R. elegans*, but most easily distinguished by the habit. The plant is small and densely caespitose. The leaves are erect, thickly coriaceous, rigid, narrowly elliptical, acute and slightly subconduplicate. The peduncles bear small flowers beyond the tips of the leaves. The synsepals are yellow and spotted in rows below the middle with purple-brown. The petals are free of marginal processes. The lip is oblong with the epichile slightly convex and broader than the hypochile.

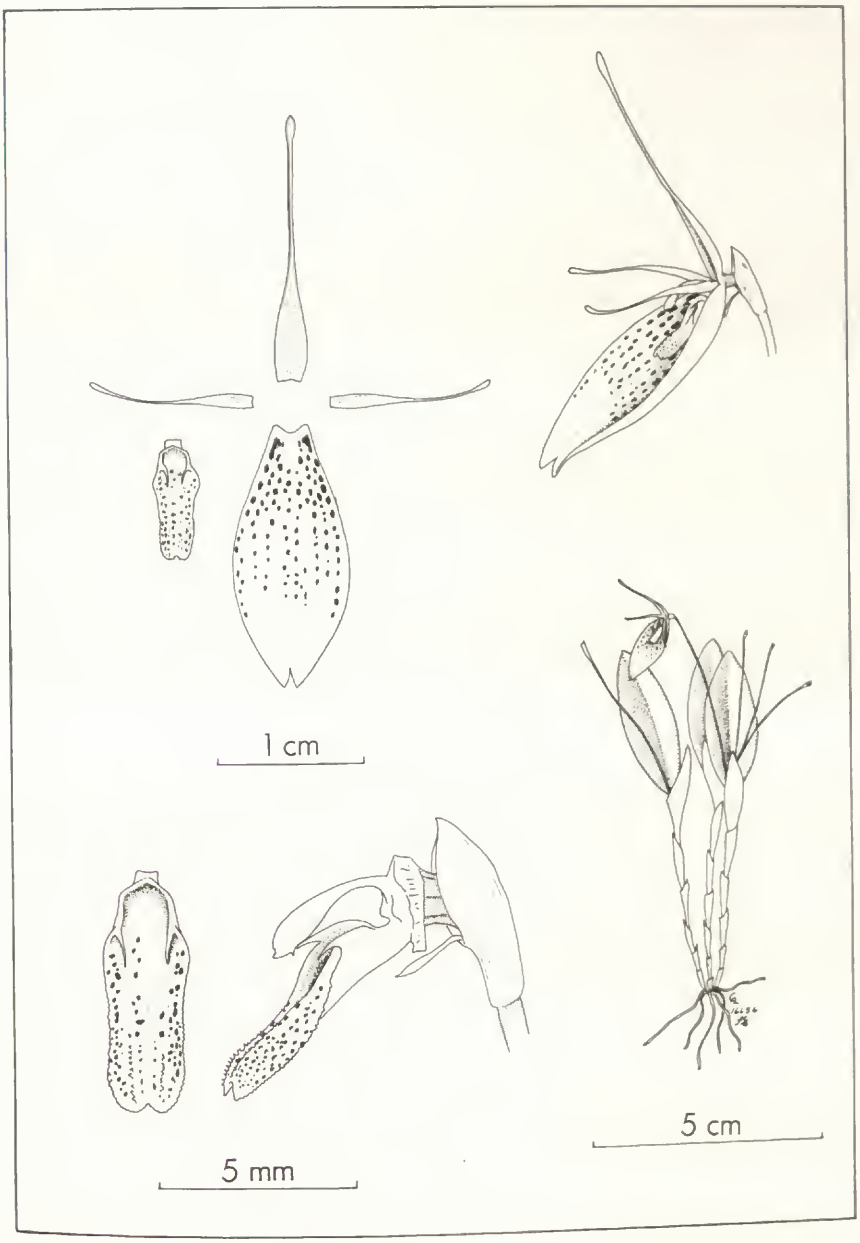


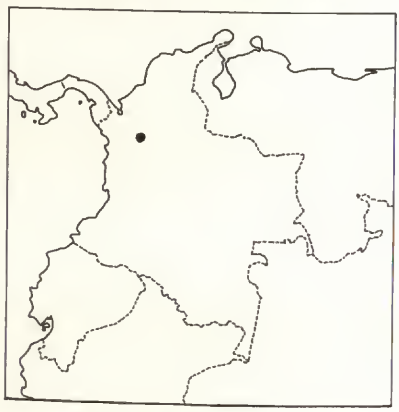
Plate 27. *Restrepia escobariana* Luer

Restrepia falkenbergii Rchb. f., Gard. Chron. 1: 232, 1880.

Ety.: Named in honor of Herr Falkenberg, professional collector, who with Schmidtchen discovered this species.

Plant very large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 10-35 cm long, enclosed by 8-12 thin, whitish, loose, compressed, oblique, imbricating sheaths, intensely spotted with purple-brown on the lower sheaths. **Leaf** erect, coriaceous, more or less suffused with purple beneath, ovate, acute to subacute, 7-11 cm long, 3-4.5 cm wide, the base cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, erect, 4-6 cm long; floral bract thin, tubular, 5-6 mm long; pedicel 2.5-5 mm long, with a short filament, 3 mm long; ovary subcostate, 3-4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent yellow-white, with a red-purple midvein, narrowly ovate in the lower third, attenuated above to the purple, thickened apex, 16-27 mm long, 3-3.5 mm wide above the base, the lateral sepals connate to near the apex into a shallowly concave, elliptical synsepal, yellow with thin, longitudinal, red-purple veins, or faint purple dots below the middle, 21-26 mm long, 10 mm wide expanded, the apex obtuse, minutely bifid; **petals** membranous, translucent white with a red-purple midvein, the lower third narrowly linear-ovate with thin margins, attenuated above, terete in the distal third without forming a clavate tip, 14-16 mm long, 1.25-2 mm wide above the base; **lip** yellow-orange, diffusely flecked with red-purple, pandurate, 11-13 mm long, 2-3.75 mm wide at the isthmus, the hypochile 4 mm wide below, the epichile 4.5-5 mm wide below the isthmus, smooth and entire, with the apex broadly subtruncate-retuse, the hypochile rounded, concave, with erect, smooth margins, each with a minute, capillary, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base connected to the column-foot by a thick, rigid, cylindrical neck; **column** yellow, suffused with red, slender, clavate, 6-7 mm long, the base pedestal-like.

COLOMBIA: Dept. of Antioquia: "Medellín," alt. 3500 ft., *Falkenberg s.n.* (Lectotype as to illustration of the flower, excluding the plant: W); Venecia, Quebrada Sinifana, alt. 1800-2000 m, collected by J. M. Sema, 1969, flowered in cultivation by O. Arango at La Estrella, 26 Sept. 1977, *C. Luer 1843* (SEL); Alejandria, La Planta, (**COLOR 9, UL**),alt. 1000 m, collected by M. Zapata, 1993, cultivated at Colomborquídeas, 5 May 1993, *C. Luer 16669* (MO).



Reichenbach suspected that he first received from Patin in Medellín two flowers of this species that looked to him as if they had been "smashed and pressed with a hot iron." Because he found them useless for study, he was pleased to receive serviceable material from Falkenberg and Schmidtchen, two young collectors new to the trade, but the specimens of *Restrepia* became mixed with those of a species of another genus.

The plant preserved is indeed depicted and described as very large, but it is not a *Restrepia*. The large, broad, purple leaves borne by shorter ramicauls belong to a species of *Zootrophion*, possibly *Z. dayanum* (Rchb.f.) Luer. Even the flower of a *Zootrophion* is depicted emerging from the uppermost sheath. However, the flower illustrated and described is indeed a *Restrepia*. The illustration and description of the glabrous, pandurate lip are exactly as seen in specimens found near Medellín today. The illustration of the flower has been designated as the lectotype, excluding the plant from another genus.

Restrepia falkenbergii is uncommon, occurring locally in the Central Cordillera of Colombia near Medellín. Vegetatively, it is the largest known species of the genus. The flower is medium-sized with a smooth, narrow-waisted, violin-shaped lip. The petals are filiform above the middle without clavate apices. The yellow, brown-striped synsepal is very similar to that of the verrucose-lipped *R. brachypus*.

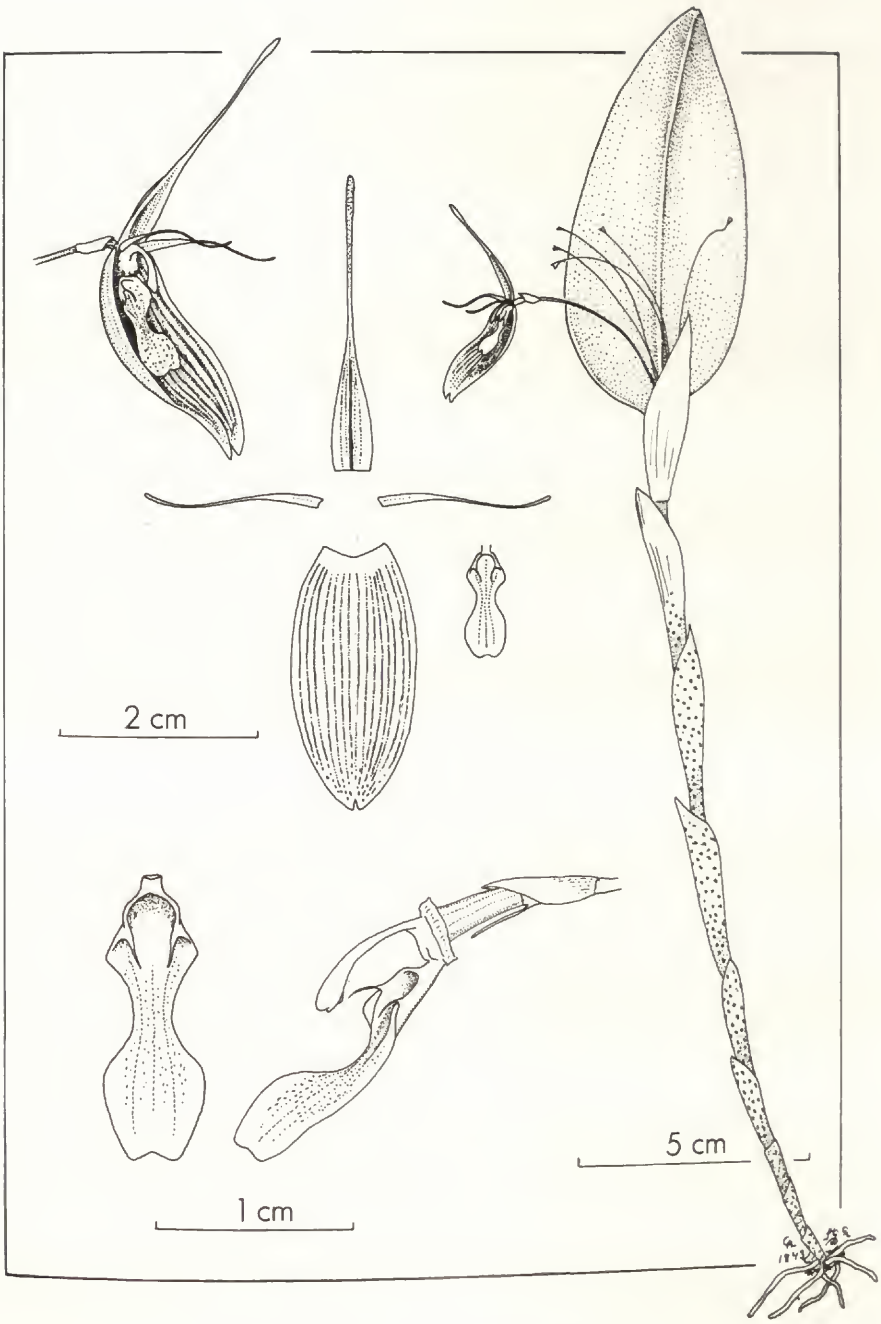


Plate 28. *Restrepia falkenbergii* Rchb.f.

Restrepia flosculata Luer, Selbyana 7: 127, 1982.

Ety.: From the Latin *flosculatus*, "small-flowered," in reference to the comparatively small flower for the large plant.

Syn.: *Restrepia flosculata* var. *pallens* Mohr & Herzum, Schlechteriana 4(1-2): 46, 1993, nomen superfluum.

Ety: From the Latin *pallens*, "pale," referring to the typical, yellow, unspotted flower.

Syn.: *Restrepia flosculata* var. *picta* Mohr & Herzum, Schlechteriana 4(1-2): 46, 1993.

Ety.: From the Latin *pictus*, "painted," referring to a spotted color-form.

Syn.: *Restrepia flosculata* subsp. *picta* (Mohr & Herzum) Mohr, Leafl. Schltr. Instit. 2: 8, 1996.

Plant medium to large, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 15-20 cm long, enclosed by 6-8 thin, whitish, loose, oblique, compressed, more or less imbricating sheaths, dotted with brown. **Leaf** erect, coriaceous, ovate, acute, 8-10 cm long, 3.5-4.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary, yellow flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, 2-2.8 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 3 mm long, with a short filament; ovary arcuate, lightly costate, 3 mm long; **sepals** pale yellow, sometimes randomly spotted with red-purple, sometimes striped in orange or red-purple, the dorsal sepal free, erect, narrowly triangular below the middle, attenuated above the middle with the apex clavate-thickened, 14 mm long, 3 mm wide at the base, 5-veined, the lateral sepals connate to near the apex into an obovate lamina, shallowly concave below the middle, 13 mm long, 9 mm wide, the apex rounded, minutely bifid; **petals** membranous, translucent yellow, narrowly linear-triangular, decurved, the margins smooth, attenuated above the middle with the apex minutely clavate-thickened, 10-11 mm long, 1 mm wide at the base; **lip** yellow, oblong, 7 mm long, 3.75 mm wide, the epichile indistinctly demarcated from the hypochile, oblong, smooth, the apex subtruncate-retuse, the hypochile rounded, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a low pair of carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, suffused with rose, slender, clavate, 6 mm long, the base pedestal-like.

ECUADOR: Prov. of Imbabura: epiphytic in cloud forest above Río Blanco between Ibarra and San Lorenzo, alt. 1400-1500 m, 14 Dec. 1961, *C. H. Dodson & L. B. Thien 1600* (Holotype: SEL); same area, cultivated in Switzerland by *R. Jenny s.n.* (MO), C. Luer illustr. 15505; Prov. of Carchi: along creek SW of Maldonado, alt. 1500 m, 8 Oct. 1981, *L. Werling & S. Leth-Nissen 419* (AMES, QCA); in trees along the river near Maldonado, alt. 1500 m, Nov. 1991, *A. Hirtz, C. Head, M. Webb & S. Ortega 5647* (MO); Chical, west of Maldonado, (**COLOR 7, LL**, typical color-form), 1995, *A. Hirtz 6163* (MO); north of Río Mira east of Lita, between Guallupe and Parambas, (**COLOR 7, LR**, striped), alt. 900 m, 16 Feb. 1996, *A. Hirtz & X. Hirtz 6290* (MO).
COLOMBIA; Dept. of Valle del Cauca: Munic. of Roldanillo, Betania, alt. 1800 m, collected by Jean Pierre Larousse, 1981, *R. Escobar s.n.* (JAUM).

This species is found in northwestern Ecuador and as far north as the department of Valle del Cauca in Colombia. With the small flower borne close to the base of the back side of the leaf, it seems most closely allied to the variable, Central American *Restrepia muscifera*.

Restrepia flosculata is easily distinguished by the often large habit and a small, short-pedunculate, more or less flat flower borne behind the base of the leaf. The color of the originally described specimen was yellow, but flowers variously spotted or striped in either purple or orange have subsequently been found to be intermixed among unspotted flowers. These colors represent color-forms of one species, not subspecies. The narrowly clavate petals are decurved. The small lip is broadly oblong without an obvious demarcation between an epichile and a hypochile.

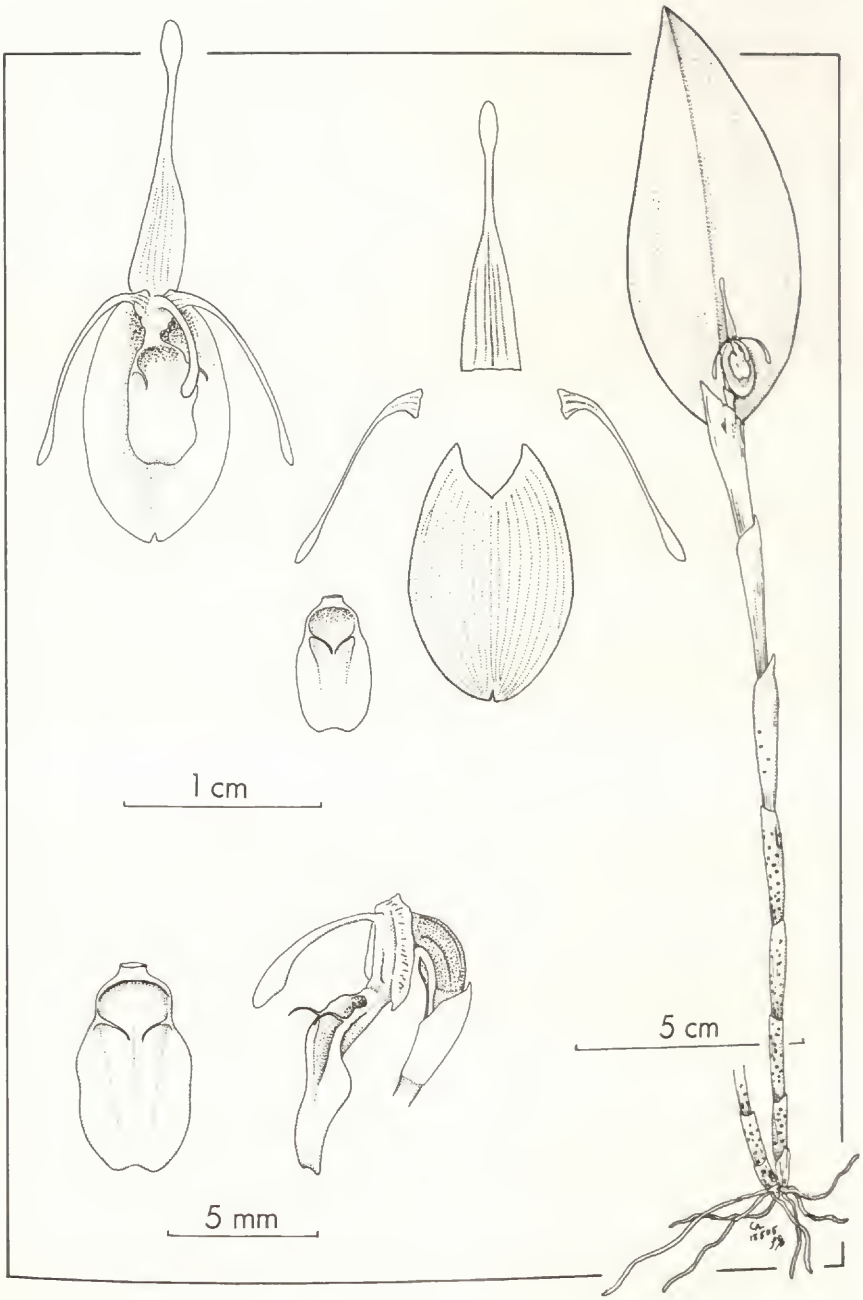


Plate 29. *Restrepia flosculata* Luer

Restrepia guttulata Lindl., Companion Bot. Mag. 2: 357, 1836.

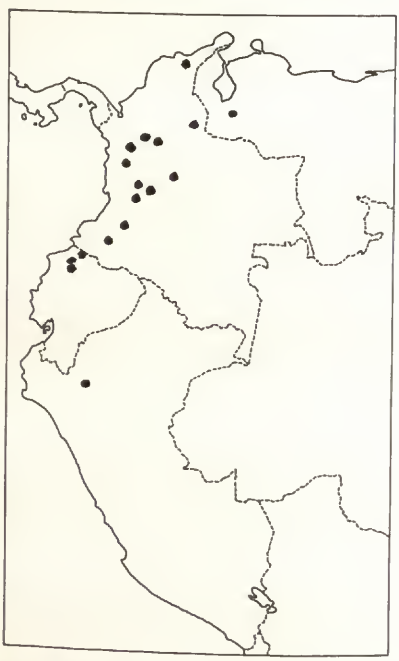
Ety.: From the Latin *guttulatus*, "dotted," referring to the color of the synsepal.

Syn.: *Restrepia robledorum* Braas & Braem, Die Orchidee 33: 155, 1982.

Ety.: Named in honor of Dr. y Sra. Oscar Robledo of Medellín, Colombia, who cultivated this species.

Syn.: *Restrepia maculata* subsp. *robledorum* (Braas & Braem) Mohr, Leafl. Schltr. Instit. 2: 16, 1996.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 8-20 cm long, uncommonly prolific, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less spotted or marked transversely with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, subacute, 4-10 cm long, 2-5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-10 cm long; floral bract thin, tubular, 6-10 mm long; pedicel stout, 5-7 mm long, with a short filament; ovary purple, lightly sulcate, 4-5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 30-50 mm long, 3-5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, white, yellow, or light purple, variously veined, dotted or spotted with brown or darker purple, 28-50 mm long, 10-15 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, veined and more or less suffused in purple, narrowly linear-triangular, the margins minutely serrulate, or with 1-2 minute, capillary appendages near the base, attenuated above the middle with the apex clavate-thickened, 18-30 mm long, 1-2 mm wide at the base; **lip** pale green, white, yellowish or light purple, variously suffused, flecked or dotted with red-brown or darker purple, oblong, 10-13 mm long, 3-5 mm wide, the epichile broadly oblong, sometimes obscurely or slightly narrowed in the lower third, microscopically to minutely verrucose with serrulate margins, the apex truncate-retuse, the hypochile suborbicular or subquadrate, concave with thin, erect margins, each side with a thin, attenuated, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 5-8 mm long, the base pedestal-like with a pair of obtuse calli.



ECUADOR: Prov. of Pichincha: Andes of Quito, *W. Jameson s.n.* (Lectotype: K); Andes of Quito, 1855, *J. P. Couthouy 20* (AMES); Andes of Quito, alt. 8,000 ft., 21 Jan. 1856, *W. Jameson 492* (AMES); woods of Pichincha, 1864, *W. Jameson s.n.* (K, W); Andes of Quito, 1864, *W. Jameson 325* (AMES, K, W); woods of Pichincha, flowered in cultivation by *Schiller s.n.* (K); subandine forest of Pichincha, *A. Sodiro 169/30* (BR); western cordillera of Quito, alt. 3000 m, 1 Dec. 1880, *F. C. Lehmann 188* (W); Mt. Pichincha near Quito, alt. 4100-4500 m, 17 Aug. 1923, *A. S. Hitchcock 21935* (NY, US); Prov. of Carchi: Tulcán, Río Chimbal, alt. 2966 m, 14 Aug. 1935, *Ines Mexia 7608* (AMES, K). Prov. of Imbabura: west of Otavalo, (**COLOR 8, UL**), alt. 3000 m, 7 Feb. 1979, *C. Luer, J. Luer, R. Escobar & A. Hirtz 3877* (MO, SEL); Buenos Aires, alt. 2500 m, flowered in cultivation in Quito, *A. Hirtz 6160* (MO), C. Luer illustr. 17726.

COLOMBIA: Dept. of Cundinamarca: without locality, obtained by Janet Kuhn from H. Schmidt-Mumm at Cota, flowered in cultivation by J & L Orchids, Aug. 1977, *C. Luer 5213* (SEL); from H. Schmidt-Mumm at Cota, flowered in cultivation by A. Jesup #18, Apr. 1993, *C. Luer 17251* (MO). Dept. of Antioquia: Medellín, Santa Elena above Medellín, alt. 1800-2200 m, *F. C. Lehmann 5017* (AMES); Cocorná, Río Cocorná, (**COLOR 8, LL**), flowered in cultivation at Colomborquídeas, 4 July 1996, *C. Luer 17939* (MO); Río Dolores between Angostura and Santa Rosa de Osos, alt. 2300-2500 m, Dec. 1891, *F. C. Lehmann 7054* (AMES, NY); Medellín, Las Palmas, alt. 2000 m, collected by J. Kuhn & R. Dressler, flowered in cultivation at J & L Orchids, 24 Mar. 1980, *C. Luer 4838* (SEL); Frontino, El Tambo, alt. 2000 m, collected by J. M. Serna, 1970, flowered in cultivation by O. Arango at La Estrella, 1 Oct. 1977, *C. Luer 1883* (SEL); Frontino, gold mine of Cerro El Plateado, (**COLOR 8, UR**), alt. 2200-2300 m, 12

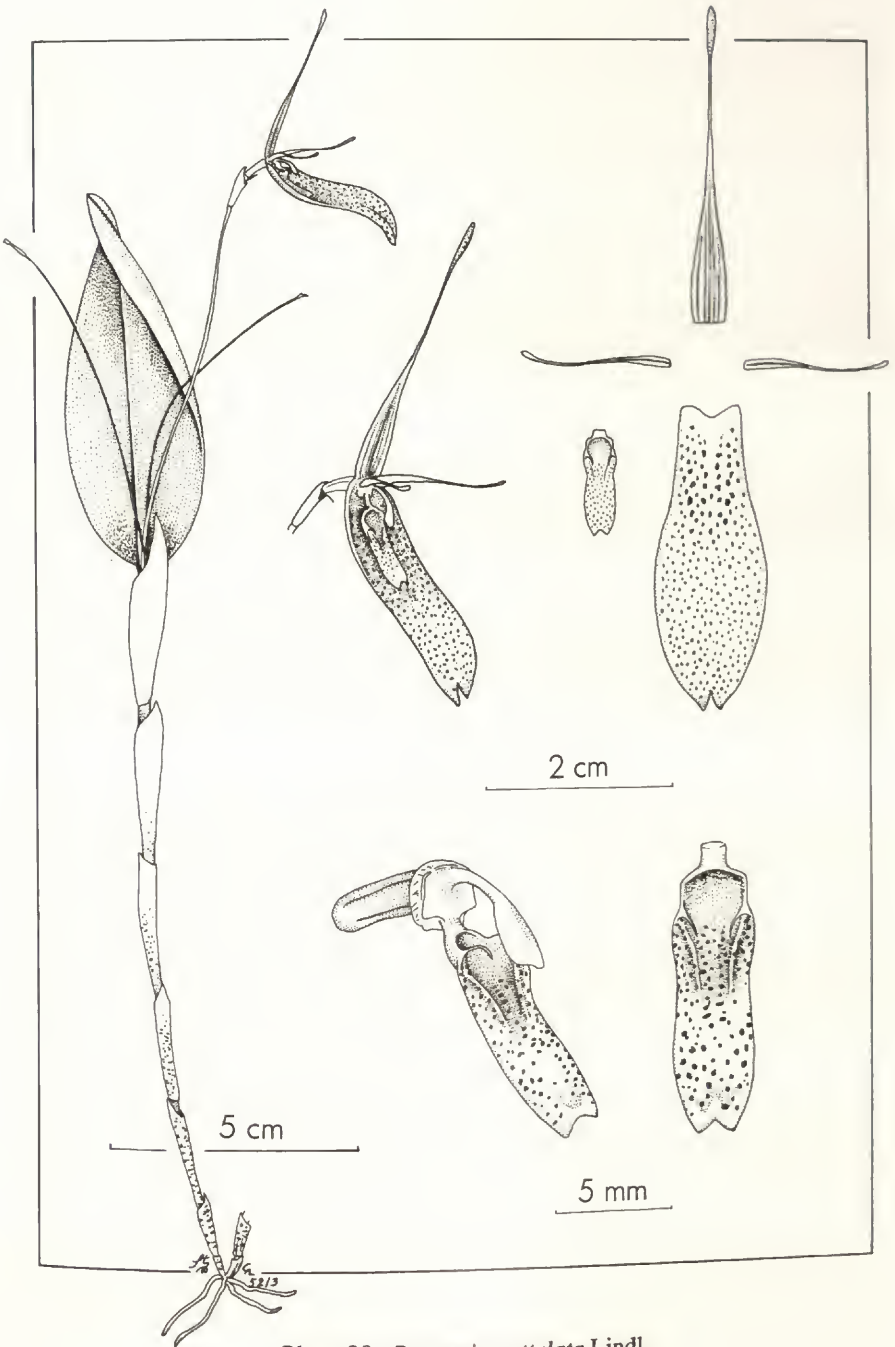


Plate 30. *Restrepia guttulata* Lindl.
(Ecuador)

May 1983, *R. Escobar 2569* (SEL); El Plateado, alt. 2000 m, collected by E. Valencia, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16673* (MO); Cortijos, flowered in cultivation at Colomborquídeas, 16 May 1993, *C. Luer 16890* (MO). Dept. of Chocó: Carmen de Atrato, flowered in cultivation at Colomborquídeas, 4 July 1996, *C. Luer 17942* (MO). Dept. of Magdelena: Sierra Nevada de Santa Marta, *Roezl, s.n.* (W). Dept. of Santander: Río, Suratá, alt. 2000-2300 m, 5 Jan. 1927, *E. P. Killip & A. C. Smith 16645* (AMES, NY); collected by I. Valencia, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16697* (MO). Dept. of Quindio: Jan. 1882, *G. Schmidtchen s.n.* (AMES). Dept. of Caldas: Pinares above Salento, alt. 2600-2800 m, 2 Aug. 1922, *F. W. Pennell 9282* (AMES, K, NY, US). Dept. of Tolima: 20 Mar. 1882, *Schmidtchen s.n.* (W). Dept. of Cauca: Puracé, Moscopán, "robledorum," (**COLOR 8, LR**), flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17539* (MO). Dept. of Nariño: forest around Hatofrio and Chiribio near Popayán, alt. 1700-2000 m, *F. C. Lehmann 6247* (AMES, K), in part. Without collection data, obtained from the National Botanical Garden, Dublin, Ireland by the Brooklyn Botanic Garden, 1956, A. Jesup #19, "willow pond," flowered in cultivation at Colomborquídeas, 16 May 1993, *C. Luer 16892* (MO).

VENEZUELA: Mérida: obtained from R. Jenny, flowered in cultivation in Basel, Feb. 1989, *J. Renz 15184* (Herb. J. Renz).

PERU: without locality, imported by F. Sander, 1884, *Hübsch s.n.* (W); without locality, collected by P. Cloes, flowered in cultivation at Hasselt, Belgium, 15 Aug. 1993, *C. Luer 16968* (MO).

Restrepia guttulata was described by Lindley from a collection by Jameson near Quito, Ecuador, where the species is still relatively frequent today. Although variable in size vegetatively, the flowers are large, with the sepals usually over three and a half centimeters in length. The synsepals are variously colored, from rose to yellow, and variously spotted with purple or brown, usually with large spots, especially toward the base. The spots of the type-specimen are large below the middle.

Lindley described *R. maculata* from two collections by Linden, one from the Tequendama Falls near Bogotá in the Eastern Cordillera of Colombia and one from near Mérida in western Venezuela. Lindley distinguished the smaller *R. maculata* from *R. guttulata* by the spotted sheaths, now known to be frequent in *R. guttulata* as well. Lindley later surmised that they were conspecific. His illustrations of the lip of each on their respective type-sheets at Kew show slight differences, however. The lip of *R. guttulata* is oblong and minimally verrucose. The lip of *R. maculata* is slightly narrowed below the middle, minutely verrucose and denticulate. The latter is considered herein as an intermediate form more closely allied to *R. contorta*.

Filiform processes occur inconstantly on the margins of the petals above the base. The large, oblong lip is similar to that of *R. antennifera*. Very little narrowing is present below the middle. The surface of the truncate blade is minutely scabrous, and the margins barely or microscopically denticulate. The illustration of *R. guttulata* in Curtis' *Botanical Magazine*, t. 6288 of 1877, is accurate.

For many years, I had considered *R. antennifera* and *R. guttulata* conspecific because of their similarity when bleached colorless in a pickling solution. However, after having examined innumerable specimens, typical striped forms of *R. antennifera* and typical spotted forms of *R. guttulata* appear distinct from each other. Therefore, both taxa are recognized here at the specific level. Although appearing very similar to *R. guttulata*, the equally frequent *R. contorta*, also with spotted synsepals, is distinguished by the usually smaller flowers with a more or less subpandurate lip with a scabrous and denticulate blade.

A large, particularly fine clone known as "willow pond," has received several awards from the American Orchid Society. It was featured on the cover of the *American Orchid Society Bulletin*, July 1978. A plant was received in 1956 from the National Botanical Garden, Dublin, Ireland, by the Brooklyn Botanical Garden and Carl Withner. Divisions of the plant are now present in many collections in North and South America and Europe.

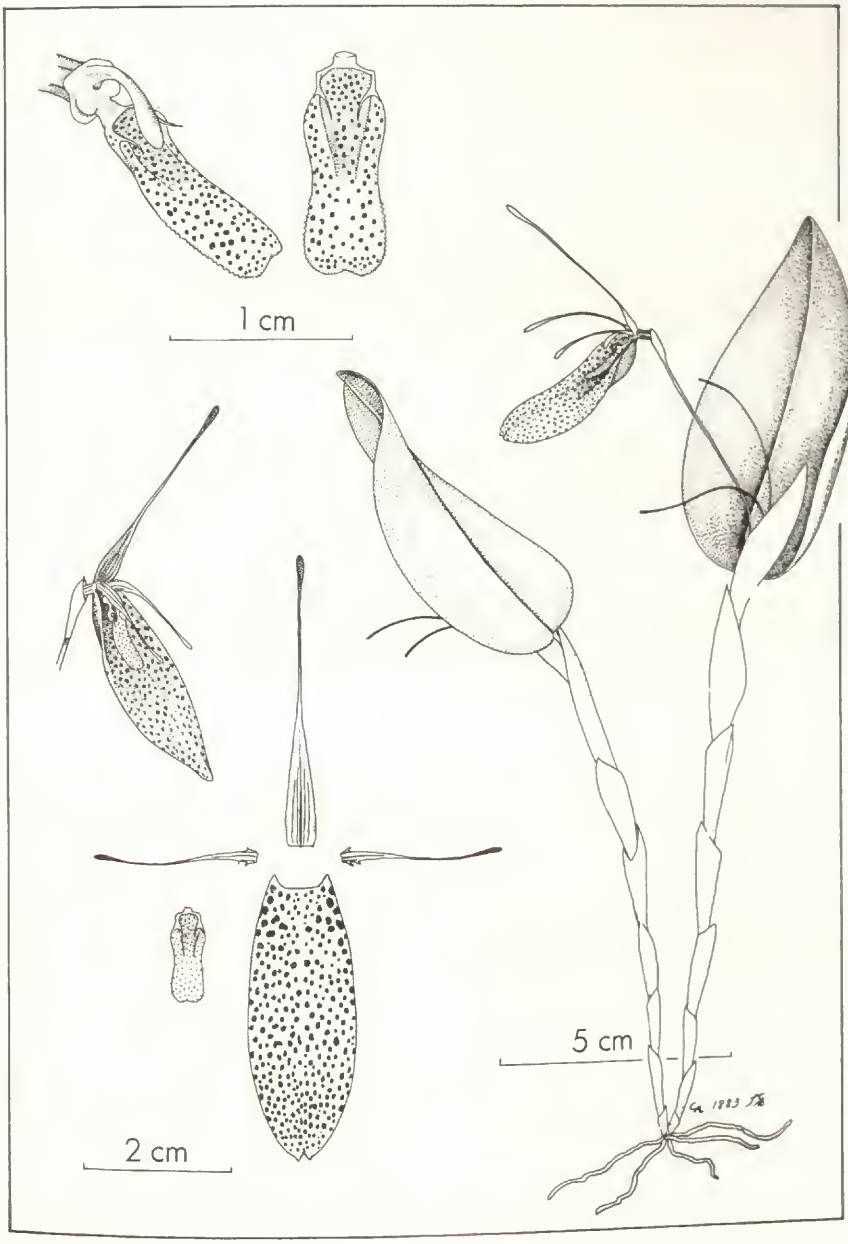


Plate 31. *Restrepia guttulata* Lindl.
(Colombia)

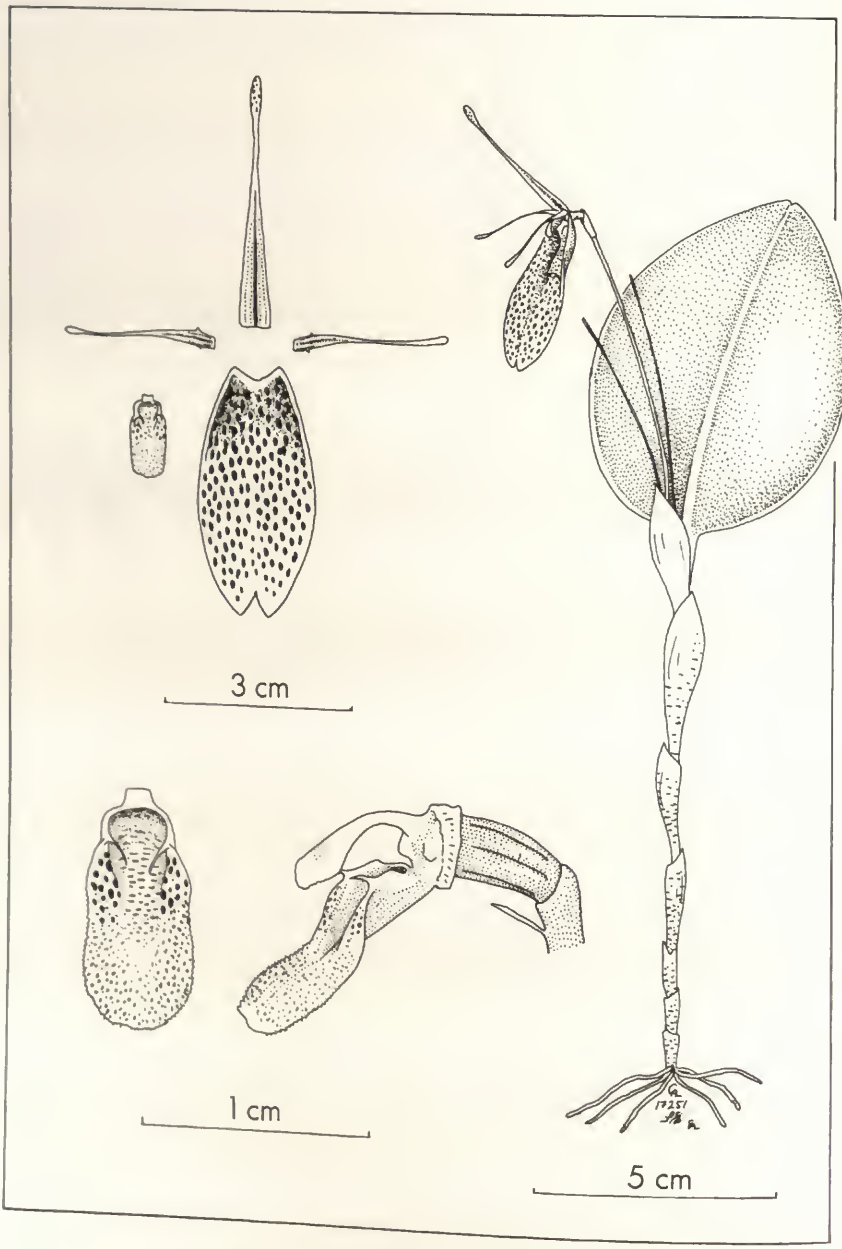


Plate 32. *Restrepia guttulata* Lindl.
(Colombia)

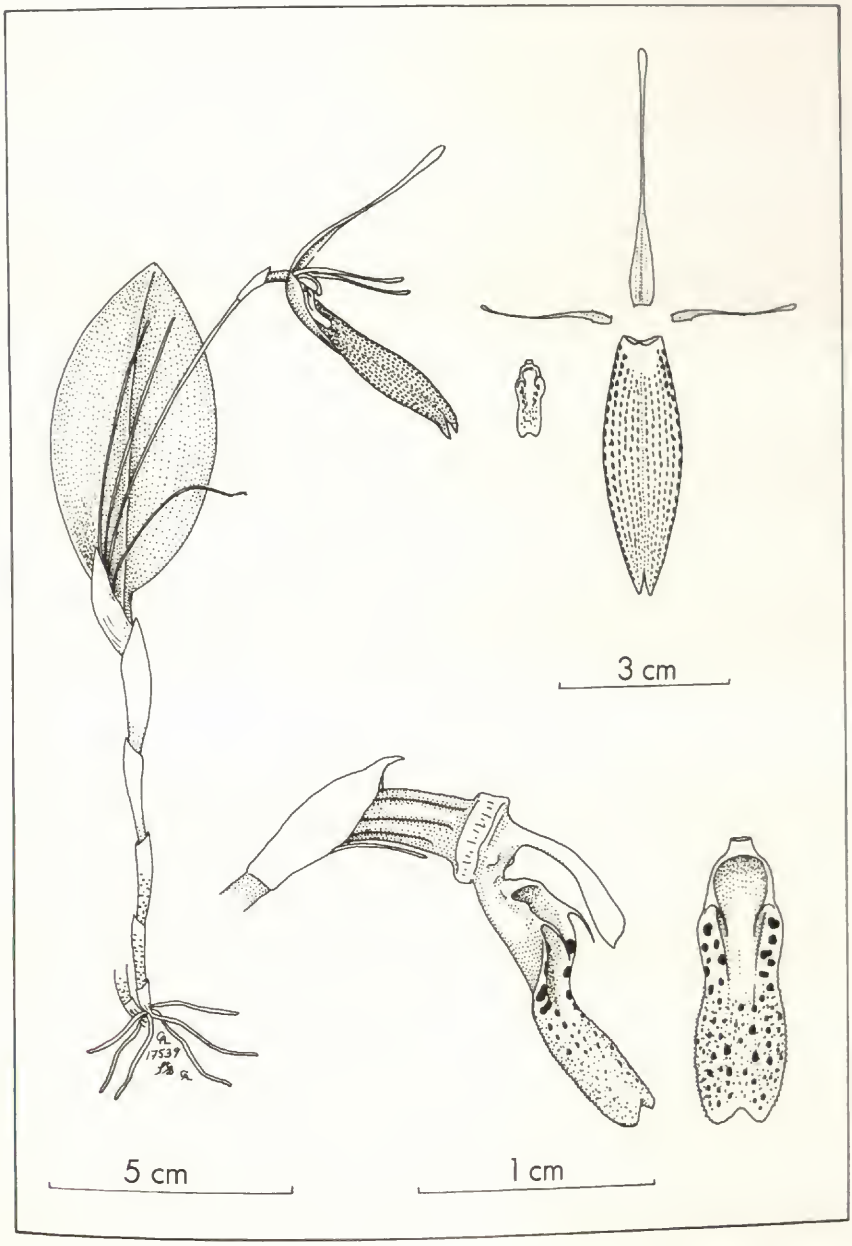


Plate 33. *Restrepia guttulata* Lindl.
(Colombia, *R. robledorum*)

Restrepia iris Luer, Phytologia 46: 383, 1980.

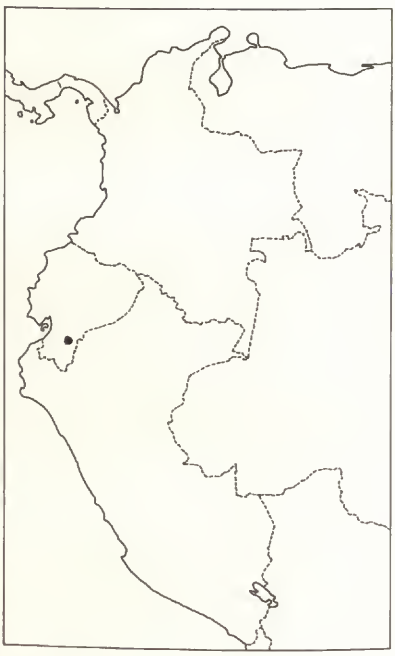
Ety.: From the Latin *iris*, "a rainbow," in allusion to the multicolored flowers.

Syn.: *Restrepia pulchella* Mohr, Die Orchidee 44: 27, 1993.

Ety.: From the Latin *pulchellus*, "pretty," referring to the flower.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 cm long, enclosed by 5-6 thin, pale, unspotted, loose, compressed, more or less imbricating sheaths. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, subacute, 3-4 cm long, 1.8-2.5 cm wide, the base broadly cuneate, contracted into a twisted petiole 3 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-3.5 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 3-5 mm long, with a short filament; ovary purplish, lightly sulcate, 2.5-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with 5 thin, purple stripes, narrowly ovate below the middle, attenuated above the middle with the apex orange, clavate-thickened, 16-20 mm long, 2 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, white, with prominent, longitudinal, purple stripes, more or less breaking up into dots at the apex, 15-18 mm long, 8-9 mm wide expanded, multiple-veined, the apex subacute, minutely bifid; **petals** membranous, translucent white, with the midvein purple and the margins orange, minutely and sparsely denticulate, narrowly linear-ovate, attenuated above the middle with the apex clavate-thickened, 12 mm long, 1 mm wide at the base; **lip** orange, speckled with brown, oblong, obscurely or slightly constricted near the middle, 5-6 mm long, 2.5 mm wide, the epichile oblong, entire, smooth, microscopically cellular-glandular, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** green, slender, clavate, 3.5 mm long, the base pedestal-like with a pair of obtuse calli.

ECUADOR: Prov. of Zamora-Chinchipe: epiphytic in cloud forest between Loja and Zamora, (**COLOR 9, UR**), alt. 2500 m, collected by Walter Teague, Nov. 1978, flowered in cultivation by H. Ripley in San Francisco, CA, 20 Aug. 1979, *C. Luer 4102* (Holotype: SEL); Km. 42 on road to Zamora, alt. 1400 m, 29 Sept. 1961, *C. H. Dodson & L. B. Thien 825* (MO, SEL); Quebrada Honda, alt. 1500 m, 17 Jan. 1982, *D. D'Alessandro 118* (SEL); between Loja and Zamora, Río San Francisco, alt. 2000 m, 1987, *F L Stevenson 91-0921-1* (MO); between Loja and Zamora, epiphytic in trees overhanging a stream, alt. 2000 m, collected by Ann Jesup, 25 Jan. 1992, *C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16153* (MO); Without collection data, flowered in cultivation, *H. Mohr RO55* (W, type of *R. pulchella*).



This little species, apparently endemic in southeastern Ecuador, is most similar to *R. elegans*. Vegetatively the two species are inseparable, and the flowers are about the same size. In addition to the conspicuous, dark purple stripes of the synsepal of *R. iris*, that break up into dots toward the apex, the proportionately small, five to six millimeter, broadly oblong, essentially glabrous lip is most distinctive.

Restrepia iris was first collected by Dodson and Thien in 1961. It has been discovered independently several times in the past 30 years.

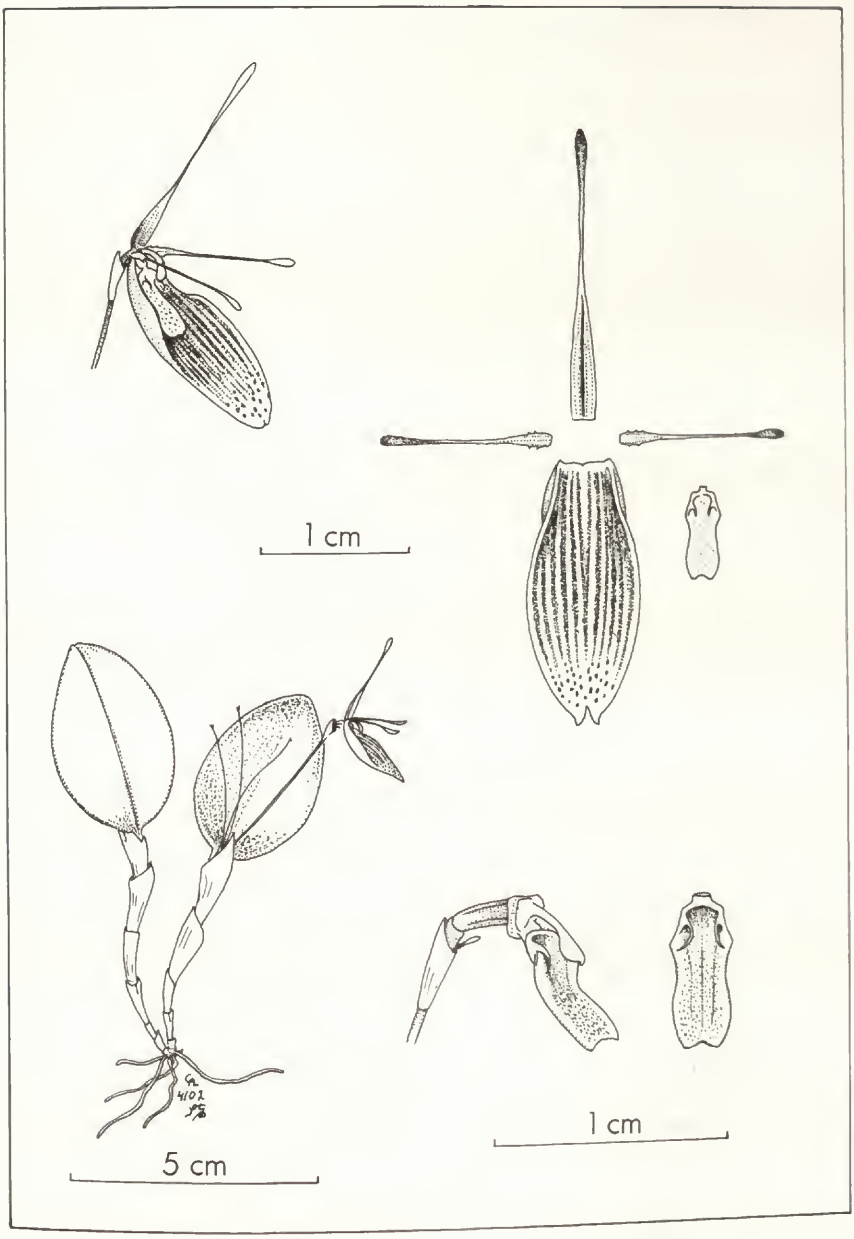


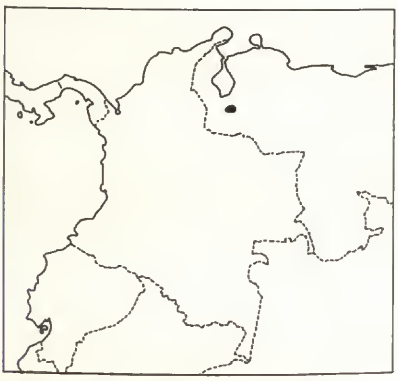
Plate 34. *Restrepia iris* Luer

Restrepia jesupiana Luer, Orquideología 20: 146, 1996.

Ety.: Named in honor of Ann Lauer Jesup of Bristol, CT, who has maintained this species in her collection for many years.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 3-7 cm long, enclosed by 5-6 white, loose, compressed, more or less imbricating, unspotted sheaths. **Leaf** erect, coriaceous, elliptical, acute to subacute, 5-6.5 cm long, 1.5-3 cm wide, the base cuneate, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-5 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 3-4 mm long, with a short filament; ovary lightly sulcate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate in the lower third, attenuated above the lower third with the apex clavate-thickened, 1 mm thick at the apex, 30 mm long, 3.5 mm wide above the base, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, yellow with faint red veins at the base, 26-33 mm long, 9-11 mm wide expanded, multiveined, the apex shortly bifid, acute; **petals** membranous, translucent with the midvein purple, narrowly linear-ovate on the lower third, both margins microscopically subserrate, capillary-attenuated above to a minutely clavate-thickened apex, 15 mm long, 1.5 mm wide above the base; **lip** yellow, 8-10 mm long, 3-3.5 mm wide, the epichile oblong, 3-veined, minutely papillose, the apex subretuse-truncate, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a broad, rigid, cylindrical neck; **column** white, slender, clavate, 4-5 mm long, the base pedestal-like with a pair of obtuse calli.

VENEZUELA: Edo. Mérida: (**COLOR 9, LL**), without collection data, received from Dunsterville via Withner as "erythroxantha," cultivated in Bristol, CT, by *A. Jesup 16* (Holotype: MO); C. Luer illustr. 17525; near Mérida, alt. 7,000 ft., Jan. 1851, *H. Wagener s.n.* (W); near Mérida, La Carbonera, at the pass between Egido and Azulita, alt. 2300 m, 4 Mar. 1949, *J. Renz 5160* (Herb. J. Renz), C. Luer illustr. 17734; Mérida, Páramo El Tambor, Jaji area, alt. 2700 m, 27 Apr. 1949, *J. Renz 5630* (Herb. J. Renz); same collection data, *J. Renz 5290* (Herb. J. Renz); Mérida: between Santa Cruz de Mora and El Molino, alt. 2800 m, 4 June 1949, *J. Renz 5410* (Herb. J. Renz); near Mérida, La Carbonera, alt. ca. 6500 ft., Feb. 1965, *G. C. K. Dunsterville illustration 917.*



This species, apparently endemic but not rare around Mérida in western Venezuela, most likely had been collected in the nineteenth century by collectors such as Linden, Schlim, and Wagener. It was a collection and a watercolor painting of this species by Wagener that was used for the description and to illustrate *R. erythroxantha* in *Xenia Orchidaceae* 1, pl. 60, fig. 2. Moritz's type-collection of *R. erythroxantha* (*Moritz 858*) is from coastal Venezuela, and synonymous with *R. elegans*.

At W there are four sheets: sheet 1, *Moritz 858*, a small plant from Colonia Tovar with spotted sepals 26 millimeters long; sheet 2, *Moritz 858*, plus Wagener's colored illustration with yellow synsepal of his collection from Mérida; sheet 3, an uncolored drawing of the last; sheet 4, medium-sized plants from Bogotá collected by Karsten. Three species are represented: sheet 1, Moritz's collection, the type of *R. erythroxantha* = *R. elegans*; sheets 2 and 3, illustrations of an undescribed species, described here as *R. jesupiana*, and sheet 4, probably *R. contorta*.

No doubt it was the above erroneous substitution of Wagener's collection for Moritz's collection that led to the incorrect identification of this species as *R. erythroxantha* in *Venezuelan Orchids Illustrated*. Plants under the name of *R. erythroxantha* were sent by Dunsterville to Carl Withner, who in turn shared plants with Ann Jesup. Her plants proved to be the same as the one illustrated by both Wagener in 1851 and Dunsterville in 1965.

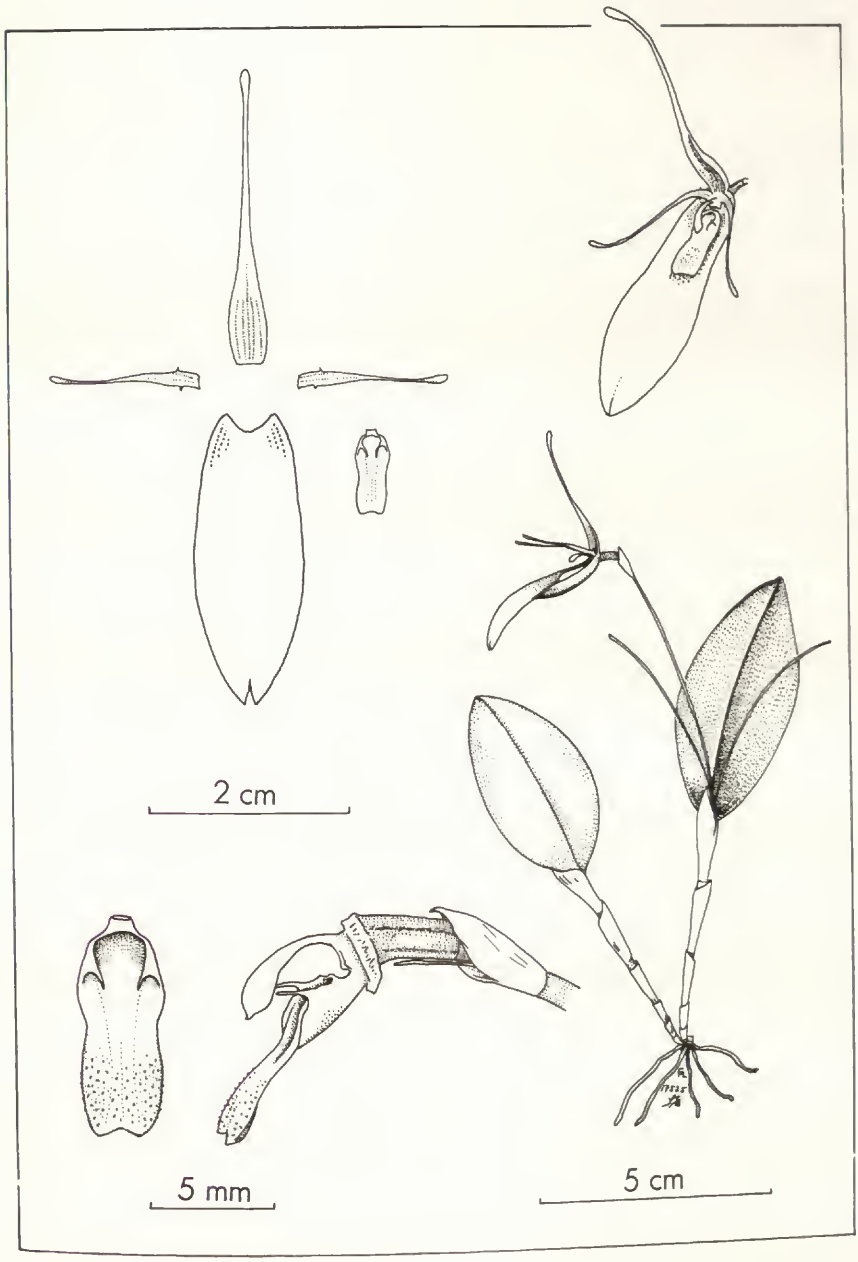


Plate 35. *Restrepia jesupiana* Luer

R. jesupiana is characterized by the medium-sized habit and large flowers with a yellow, relatively narrow synsepal that is faintly dotted or lined with purple basally or up to near the middle. The lip is large and oblong, reminiscent of a lip of *R. guttulata*.

Restrepia lankesteri Ames & C.Schweinf., Sched. Orch. 10: 20, 1930.

Ety.: Named in honor of Charles Lankester of Cartago, Costa Rica, who collected the plant.

Syn.: *Pleurothallis amesiana* L.O.Williams., Bot. Mus. Leafl. 8: 143, 1940, non *P. lankesteri* Rolfe.
Ety.: Named in honor of Prof. Oakes Ames, Curator of the Ames Orchid Herbarium.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-12 cm long, enclosed by 7-10 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths. **Leaf** erect, coriaceous, sometimes suffused with purple beneath, elliptical-ovate, acute to subacute, 4-6 cm long, 2-3 cm wide, the base broadly cuneate, contracted into a twisted petiole 5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, 4-6.5 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 3-4 mm long, with a short filament; ovary lightly sulcate, 3-4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, 5-veined with the midvein purple, narrowly ovate above the base, attenuated above the middle with the apex clavate-thickened, 22-27 mm long, 2.5-2.75 mm wide, the lateral sepals connate to near the apex into a concave, ovate lamina, bright yellow or orange, dotted with red-brown toward the base, 22-28 mm long, 8-9 mm wide expanded, the apex acute, minutely bifid; **petals** membranous, translucent white, narrowly linear-triangular, either margin with or without a minute, capillary process near the base, attenuated above the middle with the apex clavate-thickened, 16-21 mm long, 1-1.25 mm wide at the base; **lip** yellow or orange, flecked with brown or purple, 8-11 mm long, 2-2.5 mm wide, the epichile narrowly oblong, minutely verrucose with denticulate to fimbriate margins, the apex truncate to retuse, the hypochile subquadrate, concave with thin, erect margins, each side with an acute, narrowly triangular process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, suffused with rose, slender, clavate, 5 mm long, the base pedestal-like with a pair of obtuse calli.

COSTA RICA: Prov. of Cartago: La Estrella, alt. 1500-1700 ft., 12 Jan. 1923, *C. H. Lankester & A. Sancho 423* (Holotype: AMES); same area, wet forest, alt. 4500-6000 ft., flowered at Las Concavas, Dec. 1926-Jan. 1927, *C. H. Lankester 1141* (AMES); Tapantí, Río Macho, Toma de Agua, (**COLOR 9, LR**), alt. 1650 m, flowered in cultivation at Colomborquídeas, *R. Escobar s.n.* (JAUM). Without locality, collected by L. Glicenstein, flowered in cultivation by Dorothy Lankester, 21 Sept. 1979, *C. Luer 4248* (SEL); Without locality, collected by L. Glicenstein, A. Jesup #8, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17540* (MO).

Restrepia lankesteri, apparently local and uncommon in central Costa Rica, is closely allied to the frequent, sympatric *R. trichoglossa*. It is little more than a variation of a spotted form of the latter, being distinguished by the larger flower with the synsepal diffusely spotted, and a broader lip more than two millimeters wide. A beautiful watercolor painting by Rafael Lucas Rodríguez was published in *Orquídeas de Costa Rica* (Rodríguez, 1986). A black and white photograph of the specimen originally collected by Lankester is at AMES. In Mexico and Guatemala the frequent striped form of *R. trichoglossa* is often misidentified as *R. lankesteri*.

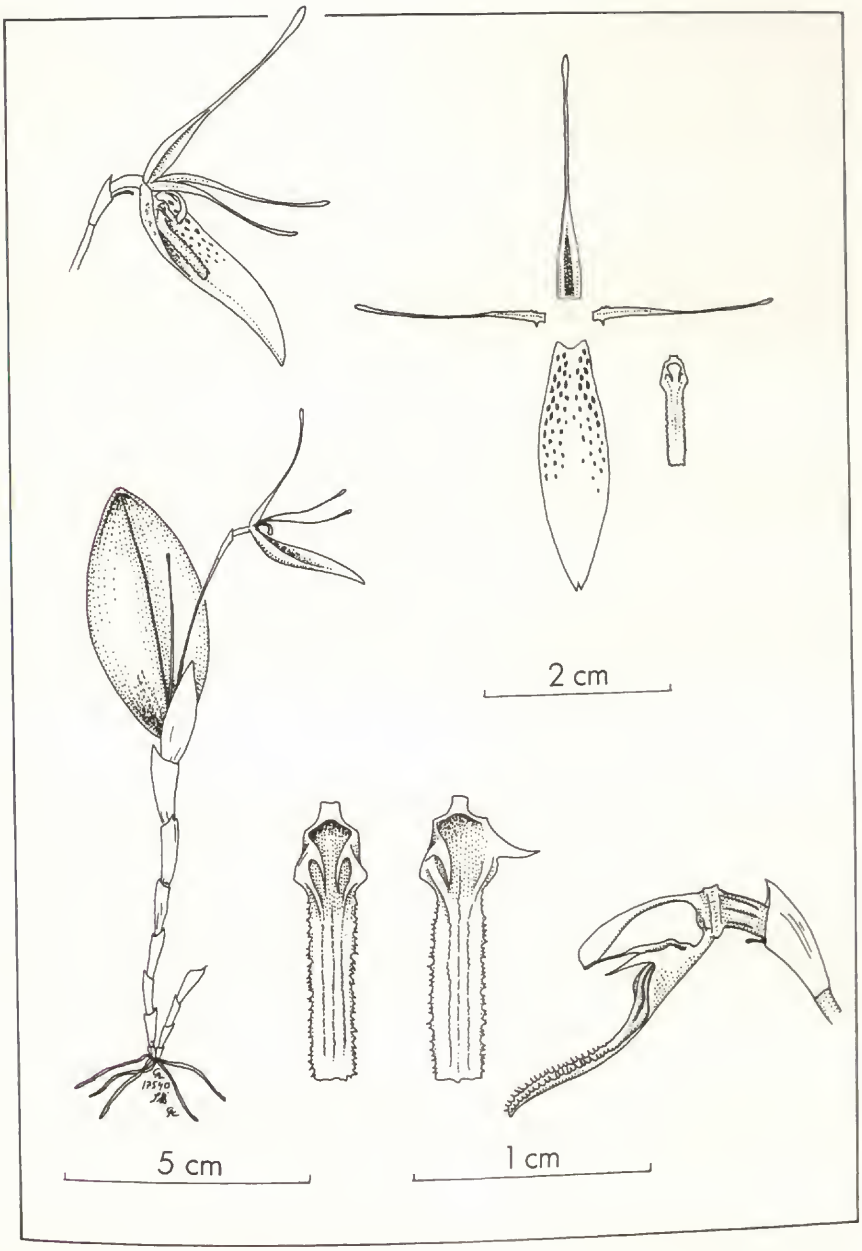


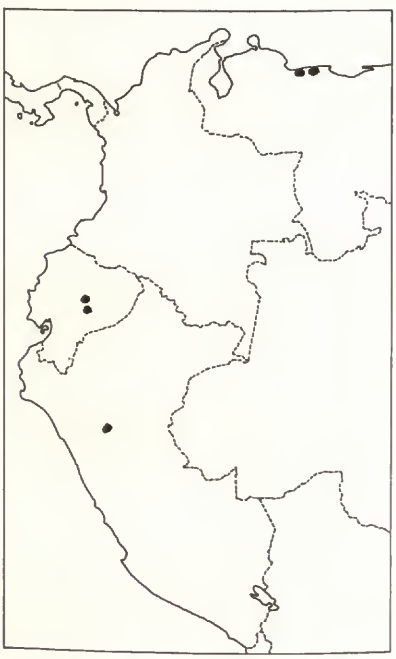
Plate 36. *Restrepia lankesteri* Ames & C.Schweinf.

Restrepia lansbergii Rchb.f. & Wagener, Bonplandia 2: 23, 1854.

Ety.: Named in honor of Reinhart van Lansbergen, Dutch traveller who collected orchids around Caracas.

Plant small in size, epiphytic, caespitose; roots slender. Ramicauls erect, 2.5-8 cm long, enclosed by 5-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost more or less dotted with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, acute, subacute to obtuse, 3-4.5 cm long, 1.5-2.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-6 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 2.5-3 mm long, with a short filament; ovary purplish, lightly sulcate, 2.5-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein deep purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 12-20 mm long, 2-2-2.5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical to more or less obovate lamina that is more or less constricted with erect margins toward the base, white to yellowish, variously spotted with purple, 12-18 mm long, 6-10 mm wide expanded, multiple-veined, the apex obtuse, minutely bifid; **petals** membranous, translucent white, with purple margins and midvein, narrowly linear-triangular, the margins with or without microscopic processes, attenuated above the middle with the apex clavate-thickened, 10-15 mm long, 0.5-1 mm wide at the base; **lip** cream-colored, variously suffused, flecked or dotted with purple-brown, oblong, obscurely dilated below an inconspicuous narrowing below the middle, 5-8 mm long, 2 mm wide, the epichile microscopically to minutely verrucose and serrate, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, slender, clavate, 3-4 mm long, the base pedestal-like with a pair of obtuse calli.

VENEZUELA: Dist. Fed.: "Caracas," alt. 5000 ft., 1 Dec. 1850, *H. Wagener 46* (Lectotype: W); Cordillera de la Costa, between El Junquito and Tovar, alt. 1100 m, 11 July 1959, *J. Renz 9761* (Herb. J. Renz). Edo. Aragua; Hda. el Pauji, near Consejo, alt. ca. 4000 ft.*G. C. K. Dunsterville 680* (K); Los Dolores above Tiara, alt. 1300 m, flowered in cultivation, *G. C. K. Dunsterville s.n.* (VEN); forest remnant, Tiara, flowered in cultivation by Dunsterville 1397 at El Hatillo, Venezuela, 28 July 1982, *C. Luer 8108* (SEL); received from Dunsterville, A. Jesup #7, (**COLOR 10, UL**), cultivated at Colomborquídeas, 6 July 1996, *C. Luer 17963* (MO); Edo. Lara: Cerro Guacamuco north of Siquisique, 1400 m, Oct. 1948, *J. Renz 4896* (Herb. J. Renz). Edo. Trujillo: Escuque, Mt. Carmelo, Cicuequita, 1500 m, Sept. 1947, *J. Renz 4397* (Herb. J. Renz).
ECUADOR: Prov. of Pastaza: near Puyo, (**COLOR 10, UR**), collected by J. Brenner, flowered in cultivation at J & L Orchids, 21 Dec. 1979, *C. Luer 4387* (SEL); same collection, flowered in cultivation by Ann Jesup #43, 10 Dec. 1988, *C. Luer 13808* (MO). Prov. of Tungurahua: Churosinguma above Baños, alt. 1550 m, 21 Jan. 1971, *B. MacBryde 134* (AMES).
PERU: Dept. of Huánuco: Leoncio Prado, Río Cuchara, alt. 700 m, Oct. 1966, *J. Schunke V. ex Bennett 2215* (AMES, UC).



In 1854, Reichenbach described simultaneously two small species collected in Venezuela by Wagener: *R. lansbergii* from "Caracas," and *R. wageneri* from the Andes around Mérida. His descriptions do not clearly identify differences. Mounted on the type-sheet of *R. lansbergii* are three single-leaved specimens referable to Wagener's collection from Caracas. The dried sepals are between twelve and thir-

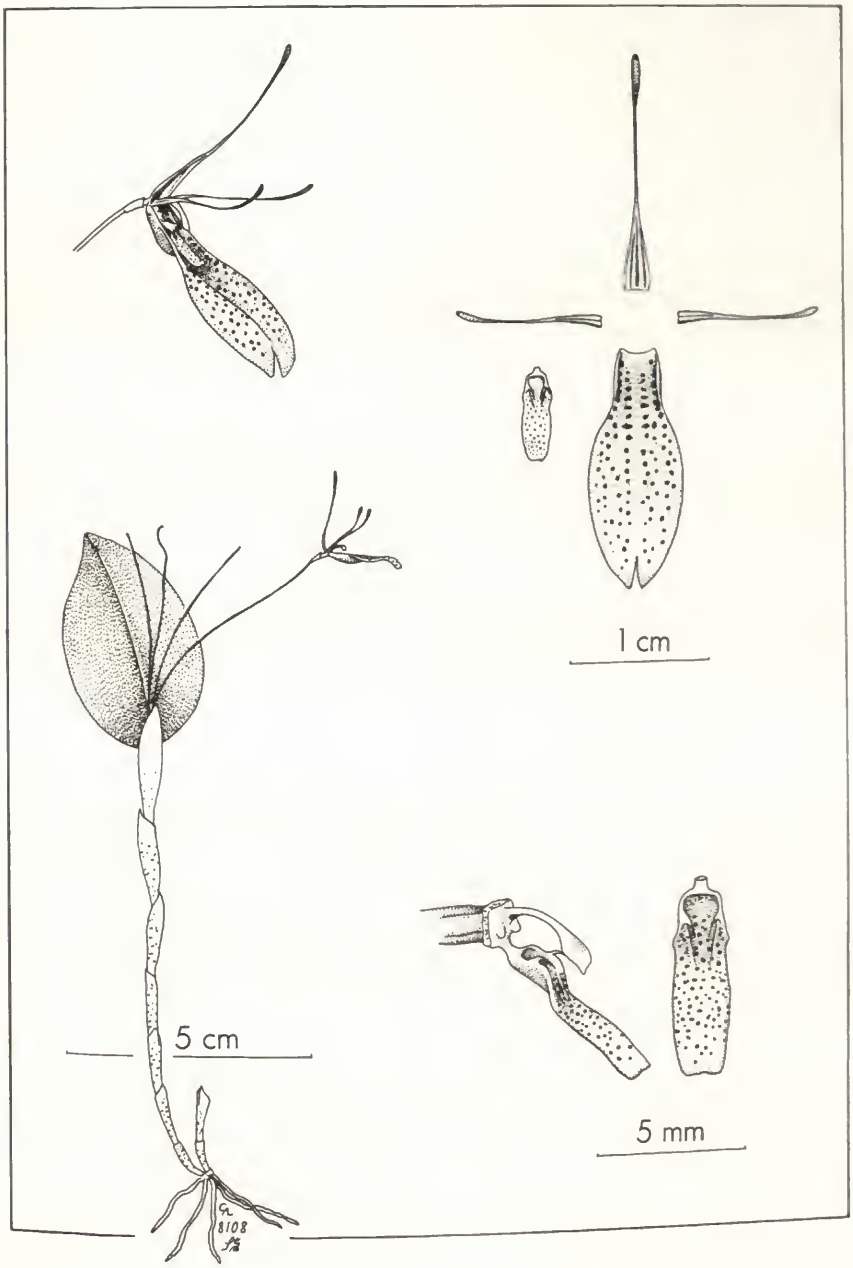


Plate 37. *Restrepia lansbergii* H.Karst.
(Venezuela)

teen millimeters long, and delicately dotted. They are accompanied by a watercolor painting that shows the white synsepal spotted with purple. A small, spotted flower is illustrated in *Xenia Orchidaceae* 1, pl. 60, fig. 1.

Very similar to *R. elegans*, the concept generally accepted today as *R. lansbergii* is well documented by Dunsterville's series of variations illustrated in his article *Orchid puzzlements* (Dunsterville, 1969). He shows transitional forms between *R. lansbergii* and the striped *R. wageneri*. Garay's solution to Dunsterville's dilemma by identifying the one extreme as *R. lansbergii* and the other as "R. schlimii" with the intermediates as "hybrids" is hardly acceptable.

A collection from near Puyo in relatively lowland, eastern Ecuador, has been known for nearly 20 years as the "Ecuadorian lansbergii." The equally small flowers of the equally small plant are indeed inseparable from *R. lansbergii*. Such a widely separated, disjunct population was difficult to accept until we became aware of another locality of small plants with essentially identical flowers from Huánuco in north-central Peru. These two, widely separated localities lend some credence to the assumption of disjunct populations.

Restrepia lansbergii as popularly conceived today is a small plant with small, white, purple-spotted flowers. According to Dunsterville, the shape of the synsepal, from obovate and obtuse to elliptical and acute, and many variations of spotting are present throughout the population found in coastal Venezuela. With the acceptance of the Ecuadorian and Peruvian collections, the distribution is vastly extended.

The synsepals are either elliptical or obovate and less than 18 mm long. Toward the base the synsepal is narrowed with the sides more or less erect. The basal margins of the petals may or may not bear capillary processes. The lips are oblong and minutely verrucose.

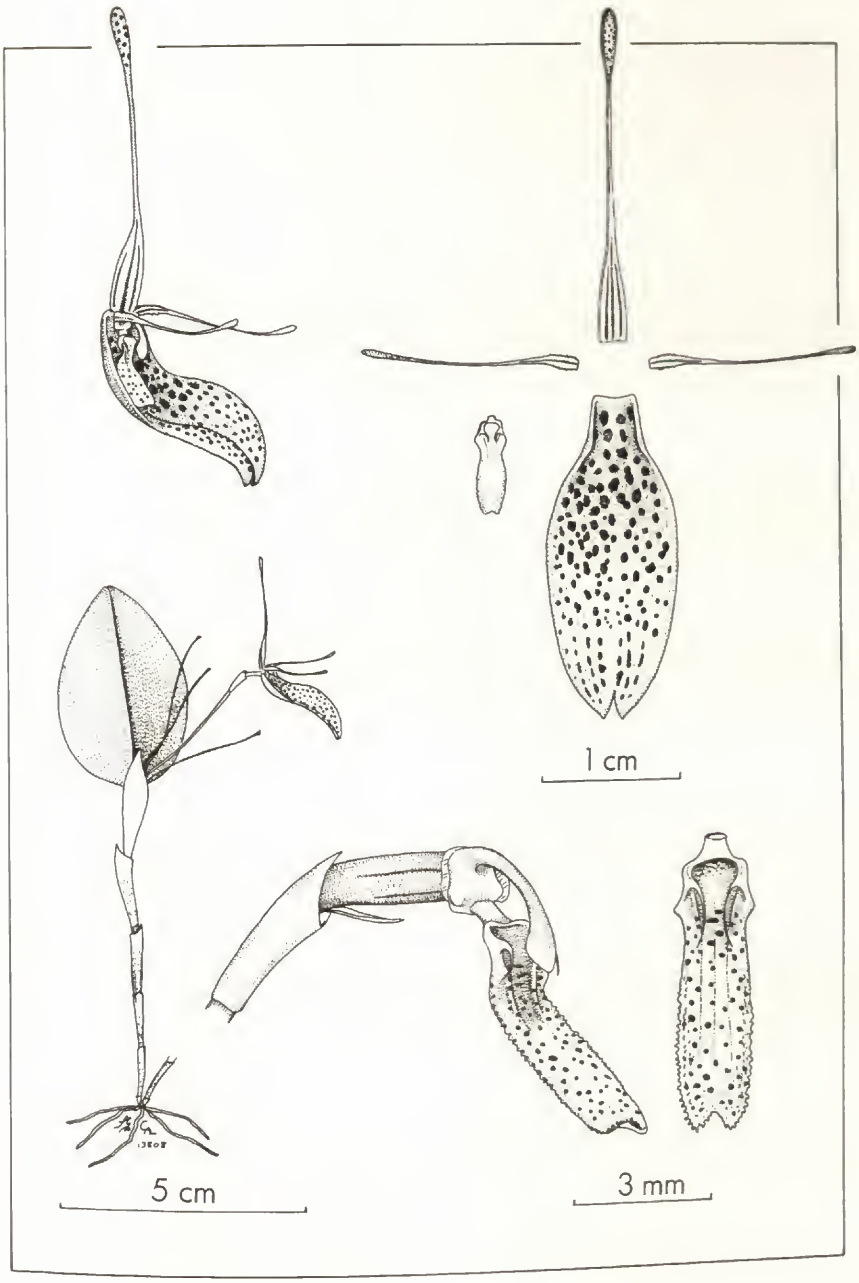


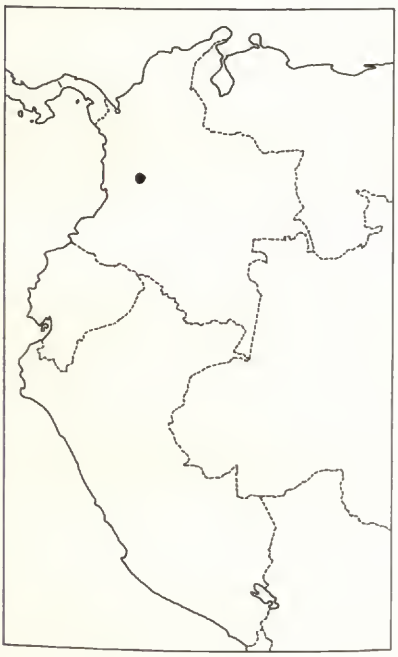
Plate 38. *Restrepia lansbergii* H.Karst.
(Ecuador)

Restrepia limbata Luer & Escobar, Selbyana 7: 76, 1982.

Ety.: From the Latin *limbatus*, "broadly bordered with a color different from the central color," in reference to the lip with a purple center third and white outer thirds.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 3-8 cm long, enclosed by 6-8 thin, grayish, loose, compressed, oblique, imbricating, distichous sheaths, the lowermost dotted with brown. **Leaf** erect, coriaceous, suffused with purple beneath, narrowly ovate, acute, slightly acuminate, 5-7 cm long, 2-2.7 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 5 mm long. **Inflorescence** a solitary, nutant flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, erect, 2.5-3 cm long; floral bract thin, tubular, 5 mm long; pedicel 3 mm long, with a short filament; ovary green, mottled with purple, lightly sulcate, arcuate, 4 mm long; **sepals** membranous, the dorsal sepal free, horizontal, translucent white, with the midvein red-purple, narrowly ovate in the lower third, attenuated above to the orange, clavate-thickened apex, 28 mm long, 3 mm wide, the lateral sepals connate to near the apex into a concave, elliptical lamina, dull white, closely striped with bright red-purple, the stripes breaking up into dots near the apex, 25 mm long, 10 mm wide expanded, the apex obtuse to narrowly obtuse, minutely bifid; **petals** membranous, translucent white with a purple midvein, narrowly linear-ovate, attenuated to a slightly thickened apex, 12 mm long, 1.5 mm wide, the margins with a few, minute toothlike processes near the base; **lip** white on the outer, longitudinal thirds, purple on the inner third, oblong, 10 mm long, 3.5 mm wide, the epichile oblong, verrucose, with serrate margins, the apex rounded, the hypochile subquadrate, concave, with erect, irregularly denticulate margins, each side with a minute, capillary, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base connected to the column-foot by a thick, rigid, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like.

COLOMBIA: Dept. of Risaralda: Munic. of Pueblo Rico, (**COLOR 10, LL**), Ciatocito, alt. 2000-2200 m, collected by J. M. Serna, flowered in cultivation by O. Arango at La Estrella, 30 Sept. 1977, *R. Escobar 1187* (Holotype: SEL; Isotype: JAUM), C. Luer illustr. 1877; Mistrató, alt. ca. 1800 m, collected by E. Valencia, Feb. 1989, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16678* (MO).



This species occurs uncommonly in the Central Cordillera of Colombia. It is characterized by narrowly ovate, acute, thickly coriaceous, rigid, subconduplicate leaves, and a large flower borne by a short peduncle along the back of the leaf. The flowers are distinguished by the forwardly directed dorsal sepal, and a synsepal closely striped with bright red-purple. The stripes break up into spots toward the apex. The lip is white with a broad rose stripe down the center. It is verrucose with minutely fringed margins of both the epichile and the hypochile.

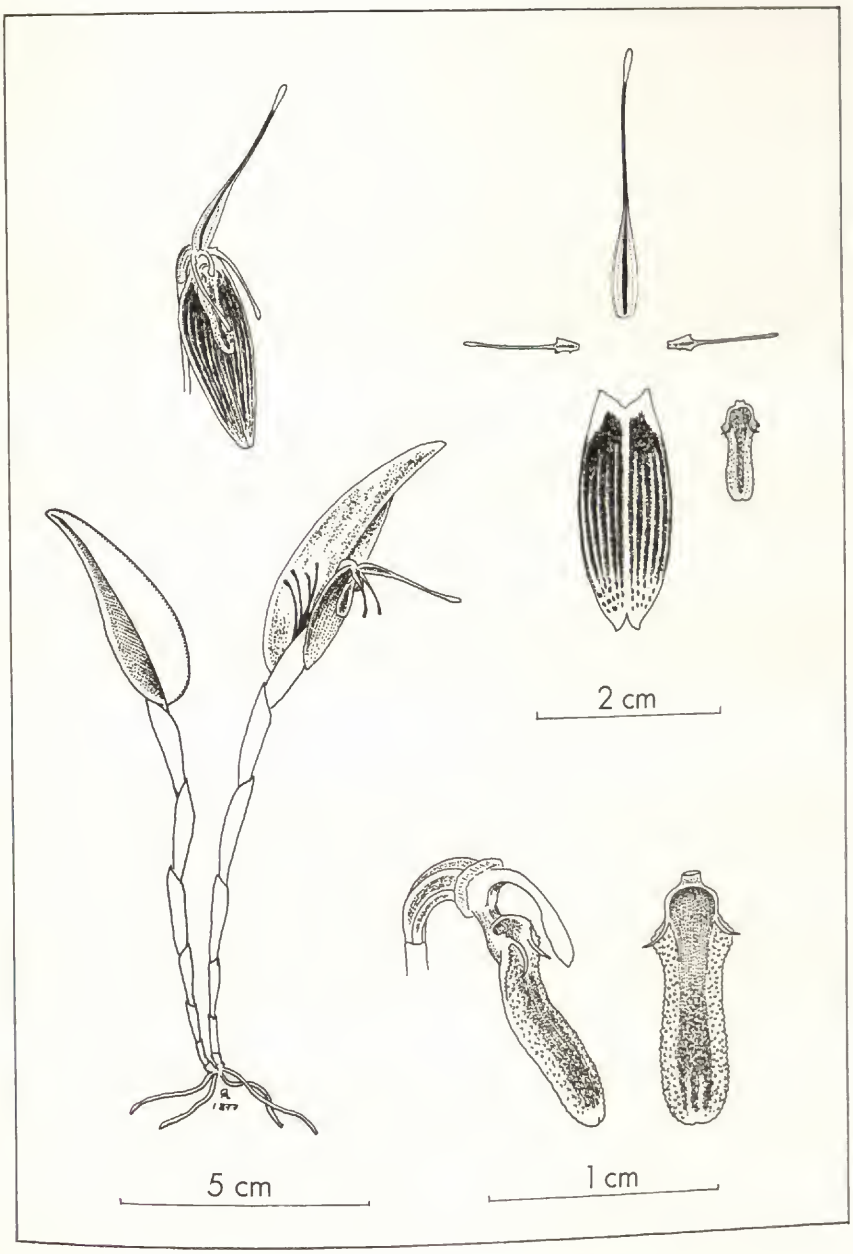


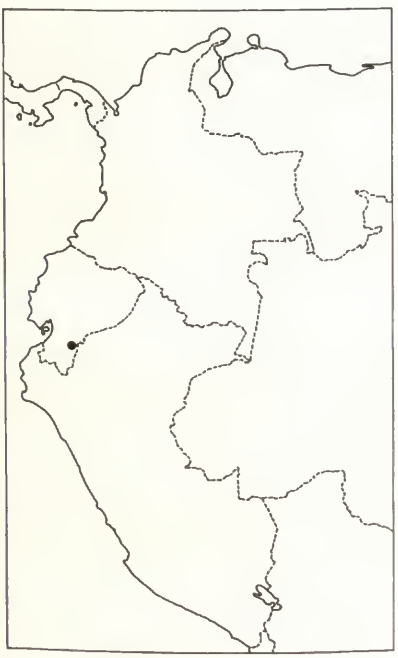
Plate 39. *Restrepia limbata* Luer & Escobar

Restrepia mendozae Luer, Orquideología 20: 157, 1996.

Ety.: Named for the late Hartman Mendoza of Vilcabamba, Ecuador, who discovered this species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 10 cm long, enclosed by 8 thin, loose, compressed, oblique, imbricating, distichous sheaths, the lowermost dotted with brown?. **Leaf** erect, coriaceous, narrowly elliptical, acute, 8 cm long, 2 cm wide, the base cuneate into a twisted petiole 7 mm long. **Inflorescence** a solitary, nutant flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, erect, 2.5 cm long; floral bract thin, tubular, 6 mm long; pedicel 3 mm long, with a filament 2 mm long; ovary green, arcuate, lightly sulcate, 5 mm long; **sepals** membranous, the dorsal sepal free, horizontal, yellow, narrowly ovate-triangular in the lower half, spotted with red, attenuated above to the clavate-thickened apex, 22 mm long, 4 mm wide above the base, 5-veined, the lateral sepals yellow, sparsely dotted with red near the base, connate to near the apex into a concave, elliptical lamina, 22 mm long, 9 mm wide expanded, the apex subacute, minutely bifid; **petals** membranous, translucent yellow, narrowly ovate, attenuated to a clavate-thickened apex, 14 mm long, 1.5 mm wide, the margins microscopically serrulate on the lower half; **lip** yellow with a pair of red spots on the hypochile, oblong, 11 mm long, 3.5 mm wide, very slightly narrowed below the middle, the epichile oblong, truncate, smooth to microscopically cellular verrucose-serrulate margins, the hypochile subquadrate, concave, with erect sides, each side with a minute, capillary, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base connected to the column-foot by a cylindrical neck; **column** white, slender, clavate, 7 mm long, the base pedestal-like with a low pair of calli.

ECUADOR: Prov. of Zamora-Chinchipe: Cordillera del Condor, (**COLOR 10, LR**), ca. 1500 m, collected by H. Mendoza, 1992, flowered in cultivation by P. Cloes in Hasselt, Belgium, 8 Aug. 1993, *C. Luer 16969* (Holotype: MO).



This species is known from only a single collection made in the Cordillera del Condor in southeastern Ecuador by the late Hartman Mendoza from whom it was obtained by Patrick Cloes of Hasselt, Belgium. This species with short, erect peduncles resembles *R. flosculata* from northern Ecuador and southern Colombia, but *R. mendozae* is distinguished by the larger flowers with a proportionately large lip.

The synsepal is yellow with a few red spots near the base, and a red spot on either side of the lip below the middle. The petals are slender and expanded. The lip is oblong, barely if at all narrowed below the middle, only microscopically verrucose, and half the length of the synsepal.

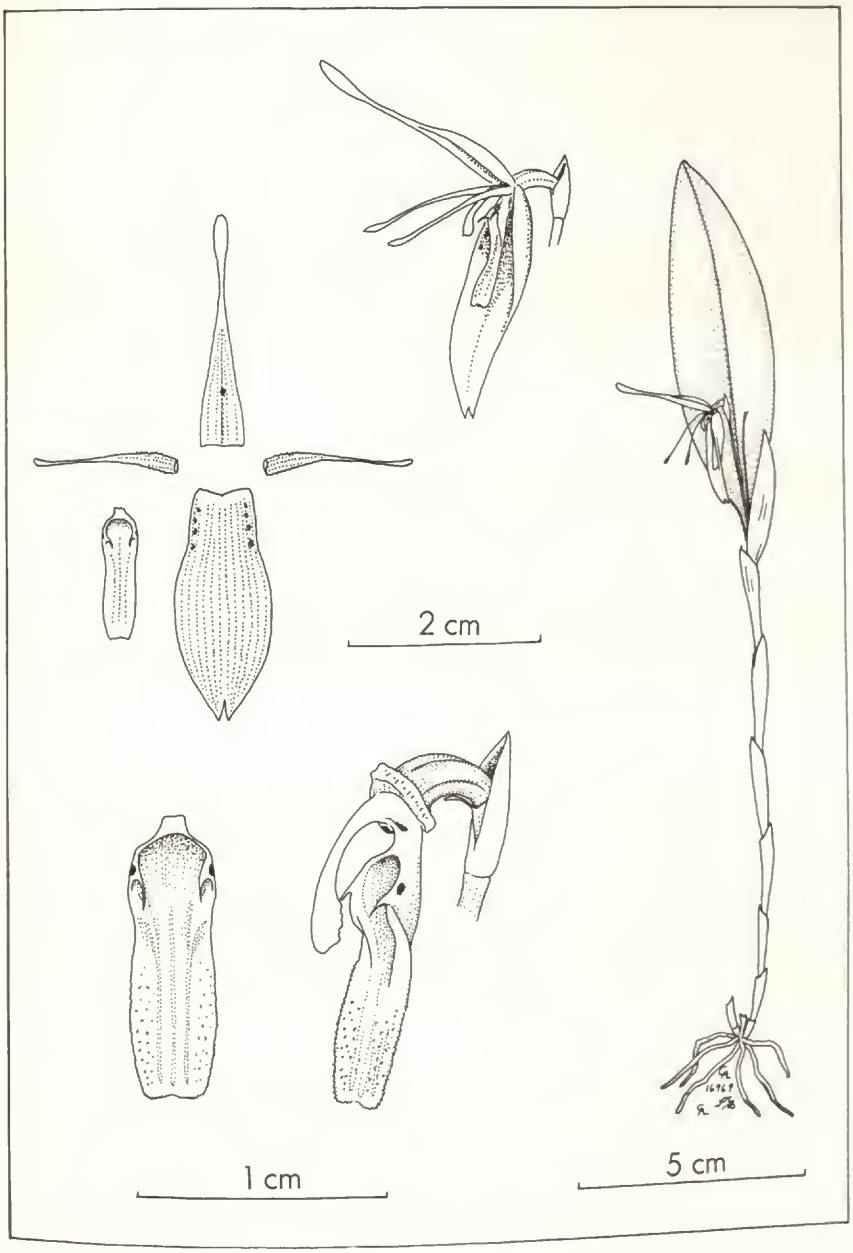


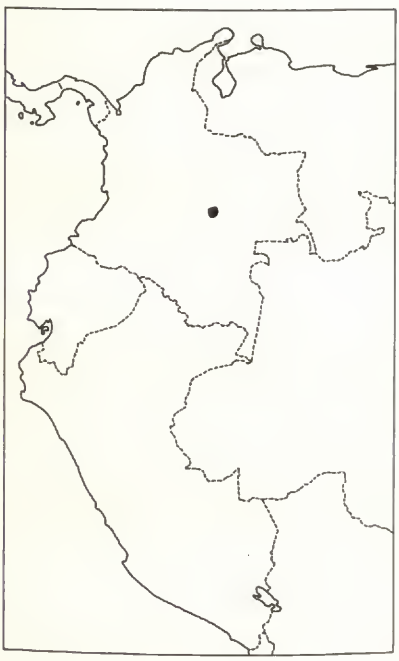
Plate 40. *Restrepia mendozae* Luer

Restrepia metae Luer, Orquideología 20: 159, 1996.

Ety.: Named for the Department of Meta in Amazonian Colombia where this species was discovered.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 cm long, enclosed by 6-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lower sheaths dotted with black. **Leaf** erect, coriaceous, ovate, subacute, 4.5-6 cm long, 2.5-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole ca. 1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 3.5-5 cm long; floral bract thin, tubular, 5 mm long; pedicel stout, 3 mm long, with a short filament; ovary 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex only subclavate, 25 mm long, 2.75 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, diffusely dotted with purple, 23-26 mm long, 9.5 mm wide expanded, multiple-veined, the free tips subacute; **petals** membranous, translucent, with the midvein and margins purple, narrowly linear-triangular, the margins entire, attenuated above the middle with the apex minimally thickened, 14 mm long, 1 mm wide above the base; **lip** dotted with a darker color, oblong, slightly narrowed near the middle, 7.5 mm long, 2 mm wide, the epichile broadly oblong-elliptic, microscopically cellular-echinate, with microscopically serrulate margins, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a small, capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** slender, clavate, 3 mm long, the base pedestal-like, with a pair of obtuse calli.

COLOMBIA: Dept. of Meta: Quebrada Cristalina, between Río Humadea and Río Ariari, alt. 550 m, 15 Sept. 1937, *J. Renz 3610* (Holotype: Herb. J. Renz), C. Luer illustr. 17733.



This taxon has very few criteria to support it at the specific level, but no species of the genus is known from a low altitude in Amazonian Colombia. It was collected there in 1937 by Dr. Jany Renz.

Restrepia metae is indistinguishable vegetatively from other medium-sized species, and the flowers are of average size. The synsepal is narrowly elliptical and diffusely covered by minute dots. The most distinguishing features are the apices of the dorsal sepal and petals which are barely clavate, those of the petals only slightly thickened, hardly clavate at all. Except for the considerably smaller size, the minutely spotted, narrow synsepal and the oblong lip are similar to those of *R. guttulata*. From *R. contorta* it differs in the nearly smooth, oblong lip.

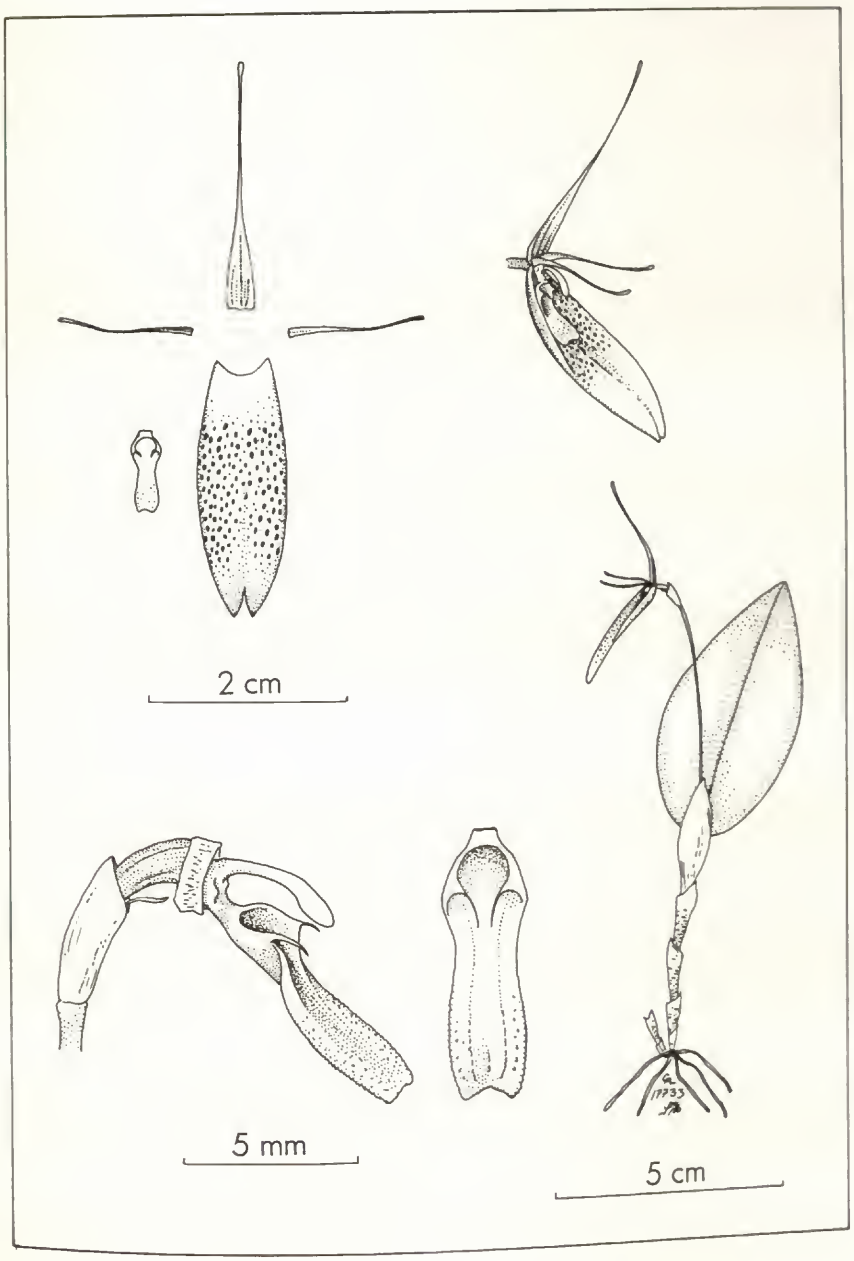


Plate 41. *Restrepia metae* Luer

Restrepia mohrii Braem, Schlechteriana 4(1-2): 44, 1993.

Ety.: Named for Hartmut Mohr of Wettenberg-Wißmar, Germany, who purchased and cultivated this species.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-8 cm long, enclosed by 5-8 thin, whitish, loose, oblique, compressed, more or less imbricating sheaths with multiple, black spots. **Leaf** erect, coriaceous, ovate, acute to subacute, 4-6 cm long, 2-2.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle; peduncle slender, 3-4 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 1 mm long, with a minute filament; ovary lightly costate, 3 mm long; **sepals** membranous, light yellow orange or light tan, the dorsal sepal free, erect, 5-veined with the midvein red-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 15-17 mm long, 3 mm wide above the base, the lateral sepals dotted with brown below the middle, connate to the apex into an elliptical, concave, boat-shaped lamina, 14-16 mm long, 6 mm wide, 9 mm wide expanded, the apex acute; **petals** membranous, translucent, with a brown midvein, narrowly linear triangular in the lower third, the margins minutely thin, each with a microscopic process, attenuated above the middle with the apex minutely clavate-thickened, 11 mm long, 0.75 mm wide above the base; **lip** yellow-brown, oblong-subpandurate, sigmoid in the lateral view, 9 mm long, 2 mm wide, the epichile oblong-tubular with the margins revolute, microscopically erose, the apex rounded and convex, the hypochile subquadrate, concave with thin, erect margins, each side with a minute, capillary, uncinate process, the disc with a pair of low, microscopically verrucose carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a short, thick, cylindrical neck; **column** yellow, slender, clavate, 3.5 mm long, the base pedestal-like.

PERU: Without collection data, allegedly near the Ecuadorian border, alt. 1400 m, flowered in cultivation without date, *H. Mohr s.n.* (Herb. Mohr). Dept. of San Martin: (**COLOR 12, UL**) alt. 2000 m, collected by W. Rauh, Aug. 1980, flowered in cultivation at the Heidelberg Botanical Garden, 1 Sept. 1987, *W. Rauh 54004a* (MO), C. Luer illustr. 12917; Roija, Pedro Ruiz-Moyobamba road, Venceremos, alt. 1750 m, 26 July 1983, *D. N. Smith 4351* (MO).

This species was first collected in Peru by Dr. Werner Rauh in 1980 and cultivated in the Botanical Garden of Heidelberg. It was to be named in honor of Dr. Rauh, and for seven years it was *Restrepia rauhii* in ed. awaiting this publication.

Vegetatively it is similar to many other species of the genus, and even the flowers, borne by peduncles near the apex of the leaf, are superficially similar. The flower, however, is easily distinguished by the concave, boat-shaped synsepal and the unique lip. From the side view the lip is sigmoid in outline, and the epichile is tubular with revolute sides.

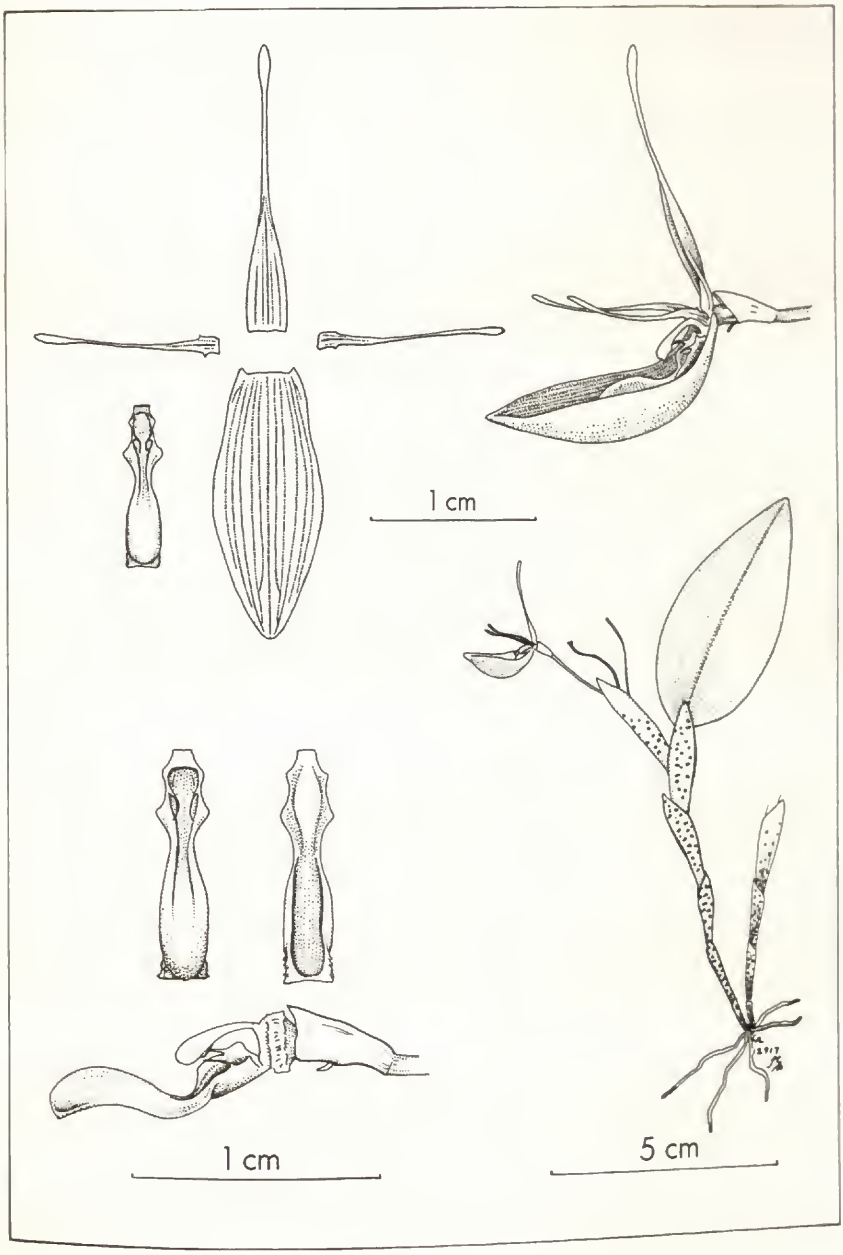


Plate 42. *Restrepia mohrii* Braem

Restrepia muscifera (Lindl.) Rchb.f. ex Lindl., Folia Orchid. *Restrepia* 2, 1859.

Bas.: *Pleurothallis muscifera* Lindl., Edwards' Bot. Reg. 28: Misc. 79, 1842.
Ety.: From the Latin *muscifer*, "fly bearing," in allusion to the appearance of the flower.

Syn.: *Restrepia lansbergii* sensu Hook., Bot. Mag. t. 5257, 1861, non Rchb.f. 1854
Ety.: Named in honor of Reinhart van Lansbergen, Dutch traveller who collected orchids around Caracas.

Syn.: *Restrepia xanthophthalma* Rchb.f., Hamburger Garten-Blumenzeitung 21: 300, 1865.
Ety.: From the Greek *xanthophthalmos*, "with yellow eyes," referring to the pair of yellow calli on the column-foot.

Syn.: *Restrepia dayana* Rchb.f., Gard. Chron. 2: 257, 1875.
Ety.: Named in honor of John Day of London, who illustrated this species.

Syn.: *Restrepia shuttleworthii* Rolfe, Bull. Misc. Inform. 138, 1892.
Ety.: Named in honor of Charles Shuttleworth who collected this species.

Syn.: *Restrepia powellii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 17: 25, 1922.
Ety.: Named in honor of *C. W. Powell* of the Panama Canal Zone who collected the plant.

Syn.: *Restrepia tonduzii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 291, 1923.
Ety.: Named in honor of A. Tonduz who collected the specimen.

Syn.: *Pleurothallis dayana* (Rchb.f.) L. O. Williams, Bot. Mus. Leafl. 8: 144, 1940.

Syn.: *Pleurothallis xanthophthalma* (Rchb.f.) L. O. Williams, Bot. Mus. Leafl. 8: 144, 1940.

Syn.: *Restrepia muscifera* subsp. *shuttleworthii* (Rolfe) Mohr, Leafl. Schltr. Instit. 2: 8, 1996.

Plant small, medium to large in size, epiphytic, caespitose; roots slender. Ramicauls erect, 2.5-17 cm long, enclosed by 4-10 thin, whitish, loose, compressed, more or less imbricating sheaths, the lower sheaths more or less dotted or transversely spotted in black. **Leaf** erect, thickly coriaceous, often suffused with purple beneath, elliptical-ovate, acute to subacute, 3.5-8 cm long, 1.5-3.5 cm wide, the base cuneate, sometimes nearly rounded, contracted into a twisted petiole 3-5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle at the base of the back of the leaf; peduncle slender, 7-20 mm long; floral bract thin, tubular, 3-6 mm long; pedicel stout, 4-6 mm long, with a short filament; ovary arcuate, often spotted in purple, 3-4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, yellow or rose, more or less spotted with purple, narrowly triangular below the middle, attenuated above the middle with the apex clavate-thickened, 9-15 mm long, 2-3 mm wide at the base, 5-veined, the lateral sepals more or less microscopically pubescent, connate to near the apex into an obovate lamina, concave toward the base, convex above the middle, white, yellow or rose, suffused, dotted or spotted with red-purple, 8-14 mm long, 5-8 mm wide expanded, the apex obtuse to broadly rounded, shortly bifid with the apices obtuse to rounded; **petals** membranous, translucent white, often with a purple spot above the base, narrowly linear-triangular, decurved, with the margins smooth to occasionally minutely denticulate, attenuated above the middle with the apex clavate-thickened, 7-10 mm long, 0.5-1 mm wide; **lip** white, yellow or rose, suffused, dotted or spotted with red-purple, oblong-ovoid, sometimes subpandurate, 4.5-6.5 mm long, 1.5-3 mm wide, the epichile oblong-ovate, dilated near or below the middle, subtruncate or rounded at the apex, minutely verrucose with minutely serrulate margins, the hypochile subquadrate, concave with thin, erect margins, each side with an uncinate, filiform process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base subtruncate, connected to the column-foot by a broad, thick, rigid, cylindrical neck; **column** greenish white, slender, clavate, 3-5 mm long, the base pedestal-like with a pair of rounded calli, often conspicuously yellow.

GUATEMALA: Without locality, *G. U. Skinner s.n.* (Holotype: K); without collection data, Jan. 1862, Bot. Mag. 5257, *Hook.f., s.n.* (W, as *R. lansbergii*); without collection data, flowered in cultivation in the garden of *Consul Schiller s.n.* (W, type of *R. xanthophthalma*). Dept. of Alta Verapaz: near Chimoté, alt. 3,000 ft., Feb. 1878, *H. von Türckheim 571* (W); without specific locality, alt. 1350 m, Jan. 1913, *H. von Türckheim 4057* (AMES); Cubilquitz, Oct. 1901, *H. v. Türckheim s.n.* (AMES); between Cobán and Carchá, alt. 1360 m, 26 Mar. 1941, *P. C. Standley 90140* (AMES); Cobán, collected by H. H. Morgan, 1979, flowered in cultivation 30 Dec. 1979, *C. Luer 4847* (SEL); same collection, flowered in cultivation 21 Feb. 1989, *C Luer 14801* (MO); above Senahu, alt. ca. 1100 m, 27 Feb. 1981, *C. Luer, J. Luer, M. & M. Dix 5911, 5929* (SEL). Dept. Baja Verapaz: between Salamá and Patal, 12 Apr. 1941, *J. R. Johnson 1820* (AMES); south of Puruhla, alt. 1600 m, 18 Feb. 1980, *C. H. Dodson 9523* (SEL). Dept. Guatemala: "in einer Baranca bei Guatemala," 16 Jan. 1857, *H. Wendland 318* (W); road to Mataquescuintla, alt. 7000 ft., 13 Feb. 1931, *M. W. Lewis 70* (AMES); between Guatemala City and Salamá, alt. 1000 m, 23 Jan. 1987, *T. B. Croat & D. P. Hannon 63522* (MO, SEL). Dept. of Quetzaltenango: between Finca Pirineos and Calahuaché, alt. 1200-1300 m, 27 Jan. 1940, *J. A. Steyermark 35018* (AMES). Dept. of San Marcos: Volcán Tajumulco, alt. 1000-1300 m, 12 Mar. 1940, *J. A. Steyermark 37572* (AMES). Without locality, (**COLOR 11, UL**).

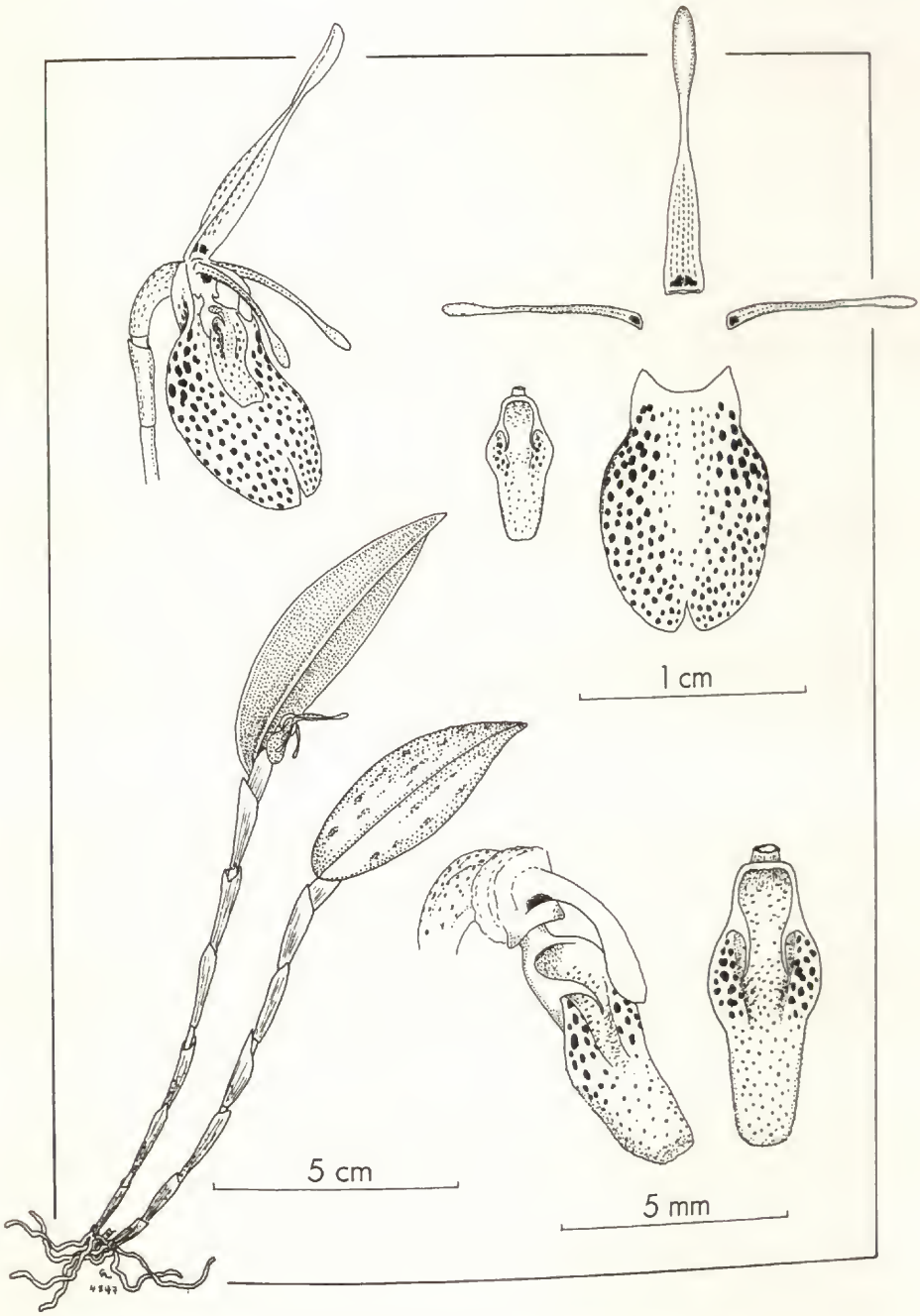


Plate 43. *Restrepia muscifera* (Lindl.) Rchb.f. ex Lindl.
(Guatemala)

MEXICO: Edo. Chiapas: Mt. Boquerón, alt. 900 m, 15 Jan. 1935, *O. Nagel 4336* (AMES); Lake Xalhueche, alt. 1350 m, 9 Nov. 1936, *O. Nagel 5551* (AMES, MO); Ococingo, Laguna Ococingo, alt. 980 m, 2 Feb. 1986, *E. Martínez 17203* (MEXU, MO); between Montebello and Bonampak, along Río Santo Domingo, alt. 850 m, 2 Feb. 1989, *M. A. Soto, M. Hernández & E. Yañez 4585* (AMO). Edo. Guerrero: Cuemavaca, alt. 1000 m, 29 Dec. 1932, *O. Nagel 2025* (AMES). Edo. Oaxaca: Pacific slopes, alt. 1000 m, 26 Dec. 1936, *O. Nagel 6438* (AMES); Río Jalatengo, alt. 1440 m, 17 Oct. 1983, *M. W. Chase 83354* (AMO, MO, SEL).

HONDURAS: Dept. of Comayagua: Coyocutena, alt, 4,000 ft., 25 May 1932, *J. B. Edwards 169* (AMES); Pite Sola, Lago Yojoa, 19 Aug. 1922, *J. B. Edwards 85, 95* (AMES); Siguatepeque, alt. 3700 ft., 19 Jan. 1938, *J. B. Edwards 352* (AMES); hills above Siguatepeque near El Achote, alt. 1350 m, 17 July 1936, *T. G. Yunckers, R. F. Dawson & H. R. Youse 5926* (AMES, K, MO).

EL SALVADOR: Faldas bajas del Cerro Montecri(SEL). Dept. Santa Ana: San José near Metapán, alt. 1100 m, 5 Feb. 1951, *O. Rohweder 3549* (MO).

NICARAGUA: Dept. of Jinotega: Macizos de Piñas Blancas, alt. 1200-1300 m, 16 Jan. 1979, *W. D. Stevens 11602* (AMES, G, MO, NY, SEL). Without collection data, *A. H. Heller 2411* (SEL).

COSTA RICA: Without locality, imported from A. Endres, flowered in cultivation in the Hamburg Botanic Garden, ca. 1875, *A. Endres s.n.* (W, type of *R. dayana*). Prov. of Alajuela: La Palma, *A. Tonduz s.n.* (type of *R. tonduzii* destroyed at B; lectotype: illustr. AMES, here designated); San Ramón, alt, 1075 m, Nov. 1921, *A. M. Brenes 161* (AMES); San Ramón, alt. 1000 m, 21 Jan. 1925, *A. M. Brenes 1355* (AMES); San Pedro de San Ramón, alt. 1190 m, 2 Nov. 1922, *A. M. Brenes 2918* (AMES); Buena Vista, San Carlos, alt. 850 m, 3 Mar. 1963, *A. Jimenez 434* (AMES); Santa Maria National Park, alt. 600 m, 7 Feb. 1978, *R. Liesner 5102* (MO); Rincón de La Vieja, alt. 900 m, 29 Feb. 1988, *G. Herrera 1567* (AMES, CR, MO). Prov. of Cartago: alt. 3000 ft., 1868, as "Restrepia concinna," *A. Endres 39* (W); 1870, *A. Endres 263* (W); Santa Maria, San Cristobal *A. Endres 32* (W); Tapantí, Río Macho, Toma de Agua, alt. 1650 m, collected by R. Escobar, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16704* (MO); Cachi, alt. 4000 ft., Dec. 1916, *C. H. Lankester 376* (K); Pejivalle, alt. 2300 ft., 14 May 1924, *C. H. Lankester 868* (AMES); El Muñeco, Río Navarro, alt. 1400-1500 m, 6 Mar. 1926, *P. C. Standley & R. Torres 51723* (AMES); Río Navarro between Río Sombrero and Quebrada Solón, alt. 1260-1400 m, 15 Nov. 1987, *M. Grayum & B. Hamel 8463* (CR, MO). Prov. of Guanacaste: El Silencio near Tilarán, alt. 750 m, 13 Jan. 1926, *P. C. Standley & J. Valerio 44689* (AMES); El Arenal, alt. 485-600 m, 18 Jan. 1926, *P. C. Standley & J. Valerio 45135, 45203, 45300* (AMES); Parq. Nac. Guanacaste, Estación Mengo, Volcán Cacao, alt. 1100 m, 17 July 1989, *INBio 232* (CR, MO). Prov. of San José: Santa Maria de Dota, alt. 15-1800 m, 14 Dec. 1925, *P. C. Standley 41654, 41678, 42829* (AMES); Candelaria, 8000 ft., flowered in cultivation, *Oersted s.n.* (W); Candelaria, alt. 1500 m, 1878, *F. C. Lehmann t.95* (W); Candelaria, El Salvaje, alt. 1700 m, 14 Sept. 1925, *A. Alfaro 172* (AMES). Prov. of Puntarenas, Guacimal. Altos de Veracruz, Finca Brenes, alt. 1300 m, 12 Jan. 1990, *E. Bello 1772* (CR, MO, SEL). Without locality, collected by L. Glicenstein, flowered in cultivation by A. Jesup #13, Dec. 1988, *C. Luer 13809* (MO); A. Jesup #23, **(COLOR 11, LL)**, *C. Luer 13810* (MO); A. Jesup #22 **(COLOR 11, UR)**.

PANAMA: Prov. of Chiriquí: without locality, alt. 4000 ft., Jan. 1919, *C. W. Powell 123* (type of *R. powellii* destroyed at B; lectotype: AMES, here designated; isolectotypes: K, MO); Cerro Hornito, alt. 1650 m, 13 Aug. 1974, *T. B. Croat 26968* (MO); Cerro Hornito, alt. 1700 m, 15 Dec. 1976, *C. Luer et al. 1646* (SEL); Fortuna dam site, alt. 1500 m, 11 Sept. 1977, *J. P. Folsom & R. L. Dressler 5443* (MO). Prov. of Panamá: Altos de Pacora road, alt. 650 m, 4 Mar. 1976, *C. Luer, J. Luer, R. L. Dressler & P. Taylor 957* (SEL). Prov. of Veraguas: Santa Fe, slopes of Cerro Tute, alt. 2500 ft., 25 Mar. 1947, *P. Allen & G. Fairchild 4112* (AMES); near Escuela Agricola de Piedra, 17 Nov. 1974, *S. Mori & J. Kallunki 3244* (MO, PMA); above Santa Fe, alt. 700 m, 6 Sept. 1976, *C. Luer & R. L. Dressler 1234* (SEL).

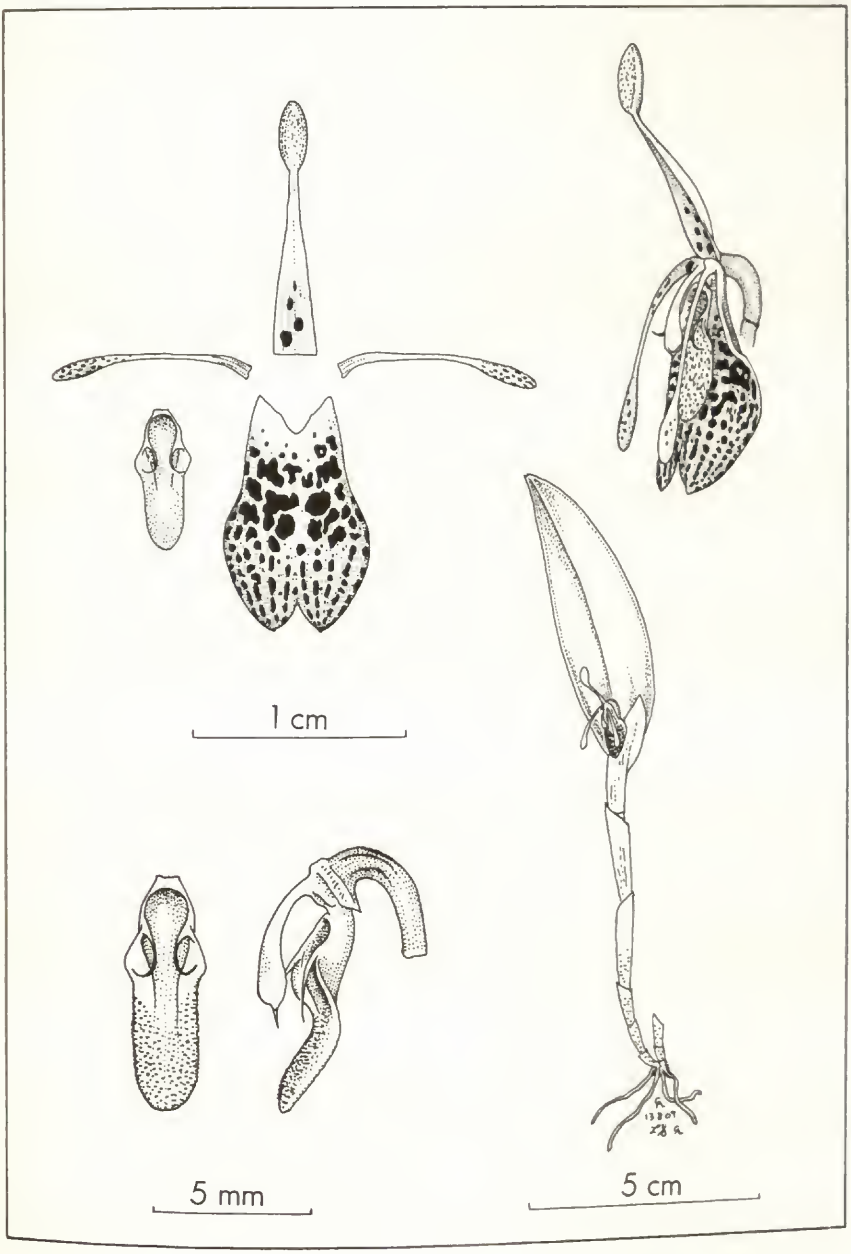


Plate 44. *Restrepia muscifera* (Lindl.) Rchb.f. ex Lindl.
(Costa Rica)

COLOMBIA: Dept. of Antioquia: Abriaqui, Río Herradura, alt. 2200-2270 m, 13 May 1983, *R. Escobar 2593* (SEL), C. Luer illustr. 4839; Boquerón, **(COLOR 11, LR)**, alt. 2400 m, *R. Escobar 3328* (JAUM); Palmitas, alt. 2300 m, collected by E. Acevedo, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16701* (MO); Dabeiba, collected by M. Zapata, May 1989, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17535* (MO); Titiribí, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17537* (MO); Dept. of Chocó: Bahia Solano, alt. 300 m, collected by G. Misas, flowered by *P. Ortiz 917* (HPUJ). Without data, flowered in cultivation by Messrs. Charlesworth, Shuttleworth & Co., 1891, *Shuttleworth s.n.* (K, type of *R. shuttleworthii*).
ECUADOR; without locality, specimen sterile, *F. C. Lehmann 173* (W).

This species was first described by Lindley as *Pleurothallis muscifera* from a Guatemalan collection by Ure Skinner. It is commonly known today in collections as *R. xanthophthalma* which was also described from a Guatemalan collection. It is a frequent and variable species in its wide distribution from Mexico into the Western Cordillera of Colombia. At W a sterile specimen from Ecuador collected by Lehmann over a century ago appears to be this species.

Several vegetative and color forms of this species have acquired specific names since the original description, no two populations being exactly the same in size, shape and color. Broad-leaved forms appear distinctly different from narrow-leaved forms, but the same variations of the flowers occur in both forms. A broad-leaved form sent by Endres from Costa Rica was described by Reichenbach as *R. dayana*. Although Plate 44 illustrates a specimen from Colombia, it fits best the Costa Rican *R. dayana*. The Andean *R. shuttleworthii* described by Rolfe is inseparable from Central American specimens. Schlechter segregated both Panamanian *R. powellii* and Costa Rican *R. tonduzii* by trivial variations in the leaves and lips.

Restrepia muscifera is easily recognized by the thickly coriaceous, ovate, more or less acute leaves. The peduncles are short and appressed to the backside of the leaf, so that the small, colorfully spotted flowers are borne near the base, facing outward on arcuate ovaries. The dorsal sepal and petals are conspicuously clavate. The petals are more or less decurved, and the clubbed apex of the petal varies somewhat in size. The synsepal, usually covered by large spots, and obovate with obtuse apices is held downward parallel to the peduncle by the sharply arcuate ovary. The lip is elliptical, oblong to ovoid, but sometimes minimally narrowed between the epichile and hypochile. The epichile is obtuse and minutely verrucose and denticulate. From each side of the hypochile a minute, hairlike process curves forward. Although incorrectly identified as *R. lansbergii*, a specimen of this species from Guatemala is well-depicted in Curtis' *Botanical Magazine* t. 5257 of 1861.

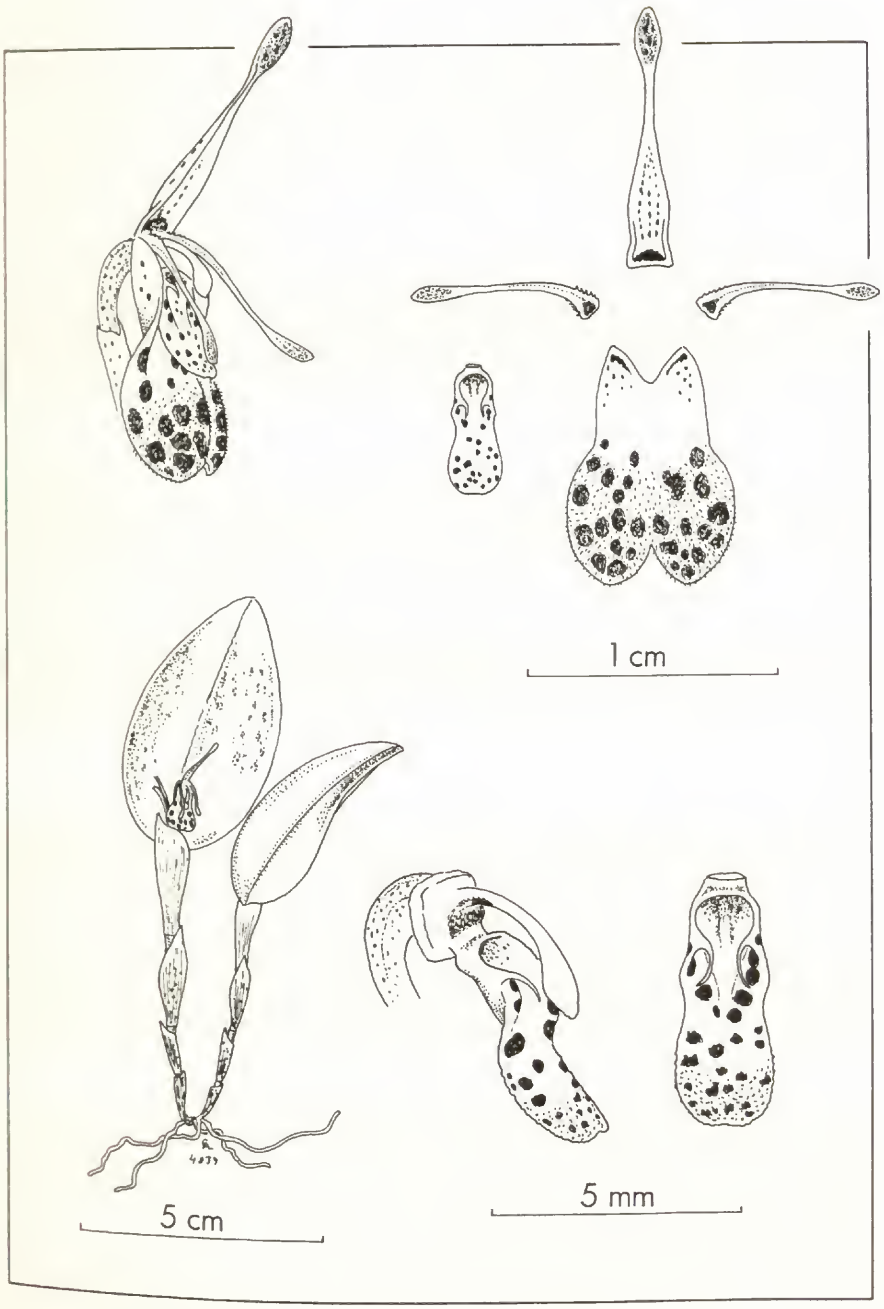


Plate 45. *Restrepia muscifera* (Lindl.) Rchb.f. ex Lindl.
(Colombia)

Restrepia nittiorhyncha (Lindl.) Garay, Bot. Mus. Leafl. 21: 253, 1967.

Bas.: *Pleurothallis nittiorhyncha* Lindl., Folia Orchid. *Pleurothallis* 20, 1859.
Ety.: From the Greek *nittiorhynchos*, "a duck's bill," in allusion to the appearance of the lip.

Syn.: *Humboldtia nittiorhyncha* (Lindl.) Kuntze, Rev. Gen. Pl. 668, 1891.

Syn.: *Restrepia schlimii* Rchb.f., Linnaea 12: 45, 1877. ?41:45, 1876
Ety.: Named in honor of Louis Schlim who collected this species.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, more or less flexuous, 5-12 cm long, enclosed by 5-8 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, the lower sheaths spotted with black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, subacute to obtuse, 4-7 cm long, 1.5-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 3.5-5 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 3 mm long, with a minute filament; ovary lightly sulcate, dotted in rose, 2-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent yellow with the midvein purple-brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 13-14 mm long, 2.5 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a concave, elliptical lamina, yellow or yellow-orange, spotted with red-brown, or striped with orange, 12 mm long, 9 mm wide expanded, the rounded apex minutely bifid, sometimes convex with the tip deflexed; **petals** membranous, translucent yellow with the midvein brown, oblong in the lower third, narrowly triangular above and attenuated into the clavate apex, the margins with 1-2 minute, acute angles or processes between the lower and middle thirds, 8 mm long, 1.5-1.75 mm wide above the base; **lip** yellow, heavily spotted with purple-black at the apex, ovate-pandurate, 4.5-5.5 mm long, 2.5-3 mm wide, the epichile constricted above the middle, to form a more or less rounded apex, minutely verrucose-serrate, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process extending forward beyond the middle, the disc with a low carina extending forward from the base of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 4.5 mm long, the base pedestal-like with a pair of rounded calli.

COLOMBIA: Old province of Ocaña: Ocaña, *L. Schlim s.n.* (Holotype: K); páramo, alt. 8,000-10,000 ft., 1846-51, *L. Schlim 1158* (W, type of *R. schlimii*; isotype: G); Páramo de San Pedro, alt. 3500 m, 1851, *L. Schlim 739, in part* (K); near Ocaña, alt. 2200 m, collected by J. M. Serna, 1970, flowered in cultivation in Medellín by A. Mejía, 5 Oct. 1977, *C. Luer 1912* (SEL). Dept. of Norte de Santander: between Chinacota and Toledo, Alto de Mefué, (**COLOR 12, UR**), alt. 2500 m, 12 May 1982, *C. Luer, R. Escobar & E. Valencia 7795* (SEL); cultivated at Colombor-quídeas, 22 Mar. 1989, *C. Luer 14356* (MO).

This distinct species from the Eastern Cordillera of Colombia was first discovered around 1850 in the old province of Ocaña by Louis Schlim during his expedition with Funck into New Grenada to collect orchids for his uncle, Jean Linden, of Brussels. Specimens of his collection were described in *Pleurothallis* by Lindley in 1859, and in *Restrepia* by Reichenbach in 1877. It is not known to have been found in Venezuela, but illustrations of other species from Venezuela have been misidentified as *R. nittiorhyncha* and synonymous *R. schlimii* in *Venezuelan Orchids Illustrated* as well as in the field guide.

Restrepia nittiorhyncha can be confused with no other species. It is distinguished by the medium-sized habit with small, yellow flowers borne by peduncles nearly as long as or as long as the leaf. Cultivated specimens are usually consider-

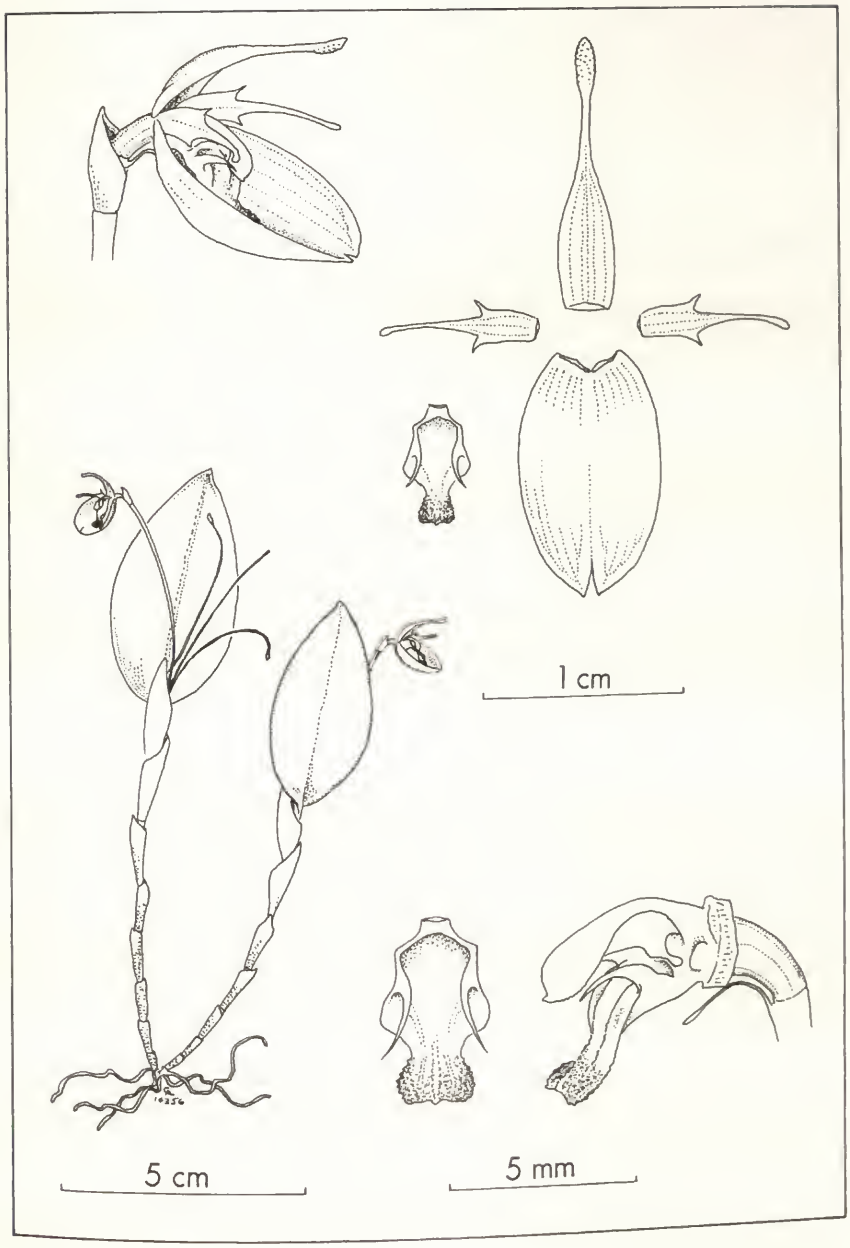


Plate 46. *Restrepia nittiorhyncha* (Lindl.) Garay

ably smaller than wild plants. The yellow, thinly striped or spotted synsepal is deeply concave, but the apex sometimes decurves with age. The petals are broad in the lower third with a prominent process on each margin. The small, very distinctive lip is broadly ovate with the epichile constricted above the middle with a much narrower but broadly rounded, minutely verrucose apex. Reichenbach's very serviceable drawing of the lip on the type-sheet of *R. schlimii* at W is far superior to that of Lindley on the type-sheet of *P. nittiorhyncha* at K.

Restrepia pandurata Rchb.f., Gard. Chron. 1: 244, 1887.

Ety.: From the Latin *panduratus*, "pandurate," referring to the violin-shaped lip.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls erect, 5-12 cm long, enclosed by 5-10 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less spotted with black. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, subacute, 4-10 cm long, 2-5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-9 cm long; floral bract thin, tubular, 7 mm long; pedicel stout, 1.5 mm long, with a slender filament; ovary purple, 6 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 25 mm long, 3.5 mm wide above the base, 5-veined, the lateral sepals rose, spotted with dark purple, connate to near the apex into an elliptical-obovate lamina, shallowly concave below the middle, becoming convex above the middle, 25 mm long, 11 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, with a purple mid-vein and purple margins, narrowly linear-triangular, the margins smooth, attenuated above the middle with the apex slightly clavate-thickened, 13 mm long, up to 1.3 mm wide above the base; **lip** rose, spotted with dark purple, pandurate in outline, 10 mm long, 1 mm wide at the middle, 4 mm wide below the middle, the apical portion spiculate, subquadrate, 3 mm long, 4 mm wide, the hypochile oblong, concave with thin, erect margins, each side with a thin, attenuated, uncinate process, the disc with a pair of low carinae extending forward from the base of each process across the isthmus onto the anterior lobe, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 5 mm long, the base pedestal-like with a pair of orange, mammillate calli.

COLOMBIA: Dept. of Cundinamarca: Fusagasugá, 1880, imported by F. *Sander s.n.* (W). Without collection data, imported by F. Sander, Sept. 1884, flowered in cultivation at the Royal Herrenhausen Gardens, Hannover, Feb. 1887, by *H. Wendland s.n.* (Holotype: W); flowered in cultivation by F. Sander at St. Albans, Feb. 1885, *W. Lee s.n.* (W), Apr. 1888, *W. Lee s.n.* (W); obtained from the Royal Botanic Gardens, Glasnevin, flowered in cultivation at the Royal Botanic Gardens, Kew, Apr. 1889, *F. W. Moore s.n.* (K); flowered in cultivation at the Herrenhausen Gardens, 16 Aug. 1993, *C. Luer 16976* (MO); flowered in cultivation at the Herrenhausen Gardens (**COLOR 12, LL**).

In appearance this species is similar to *R. contorta*, but the extremely narrow-waisted lip immediately distinguishes *R. pandurata*. Two nicely pressed flowers of *R. pandurata* are mounted on a sheet at W with a note dated Aug. 1880 in Reichenbach's scribbling that they were received from Sander, and collected with a *Masdevallia* in Fusagasuga.

It was probably imported again by F. Sander in St. Albans in 1884 and specimens were forwarded to Professor Reichenbach at Hamburg. Additional material

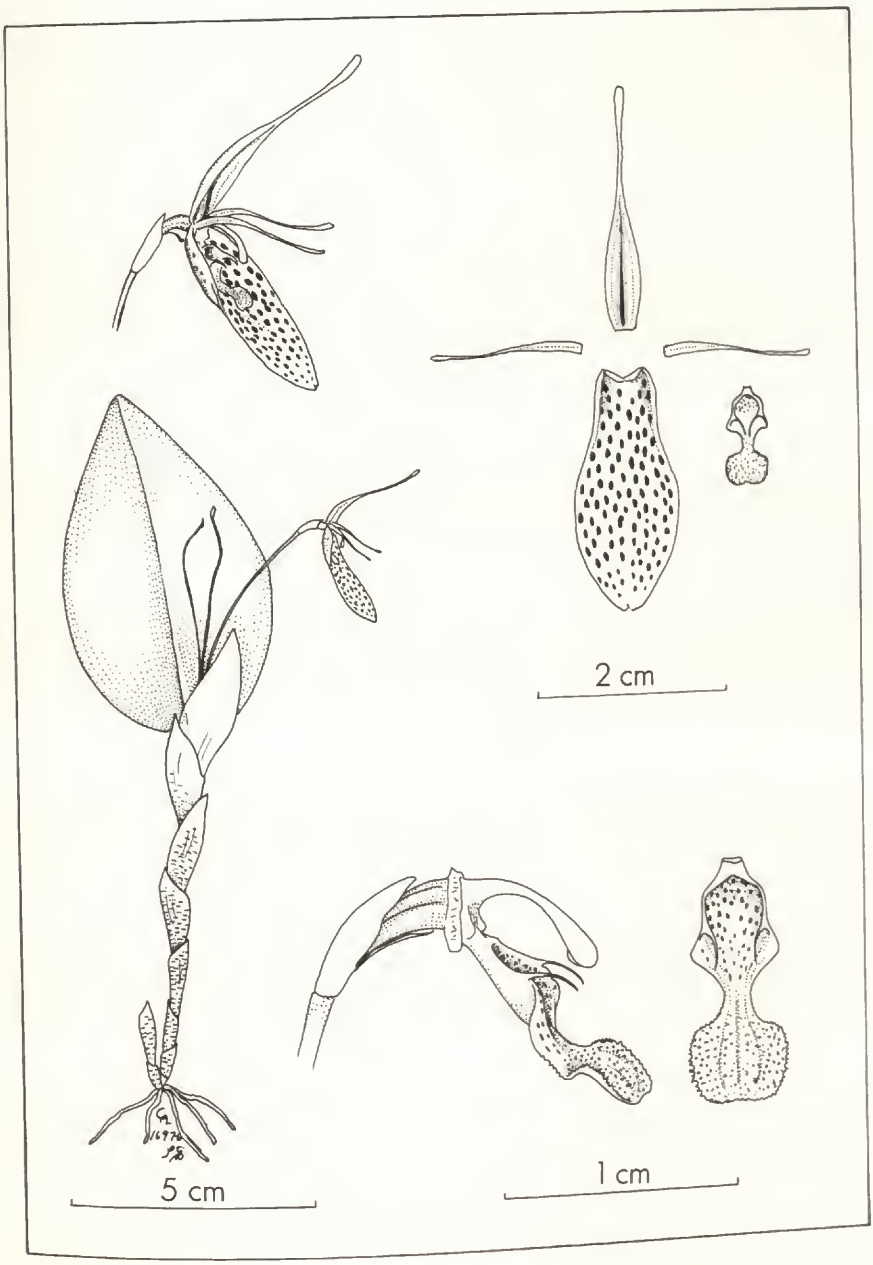


Plate 47. *Restrepia pandurata* Rchb.f.

cultivated at the Herrenhausen Botanical Garden, Hannover, probably from the same source, was sent to Reichenbach by H. Wendland. Reichenbach's figure of the lip on the herbarium sheet is accurate. Several large plants of *R. pandurata*, apparently all divisions of one clone, are presently cultivated in the Herrenhausen greenhouses, the plants most likely surviving from the original plant described over a century ago.

Vegetatively *R. pandurata* is inseparable from most of the medium-sized species. The flowers are of medium size (sepals about 25 millimeters long) and rose-colored with multiple dark purple spots. The pandurate lip is only about one millimeter wide at the isthmus. Anteriorly the lip is broadly expanded into a minutely spiculate-verrucose, transversely subquadrate lobe three millimeters long and four millimeters wide. Forms attributed to *R. contorta* possess intermediate lips.

Restrepia pelyx Luer & Escobar, Selbyana 7: 76, 1982.

Ety.: From the Greek *pelyx*, "a wooden bowl," in allusion to the concave synsepal.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-13 cm long, enclosed by 6-10 thin, whitish, loose, compressed, oblique, imbricating, distichous sheaths, the lower ones spotted with purple-brown. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, acute to subacute, 6-8 cm long, 3-4 cm wide, the base cuneate or rounded, contracted into a twisted petiole 0.5-1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, erect, 4-5 cm long; floral bract thin, tubular, 6-8 mm long; pedicel 2-3 mm long, with a short filament; ovary 5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the midvein red-purple, narrowly ovate in the lower third, attenuated above to the purple, clavate-thickened apex, 29 mm long, 4.5 mm wide, the lateral sepals connate to near the apex into a deeply concave, elliptical synsepal, yellow with red-brown spots, or tan with dark brown spots, with a broad, white zone on both sides of the base, 21-26 mm long, 11-15 mm wide expanded, the apex obtuse, minutely bifid; **petals** membranous, translucent white with a red-purple midvein, the lower third narrowly linear-ovate with yellow, minutely erose margins, attenuated above to a slightly thickened apex, 16 mm long, 1.25 mm wide; **lip** diffusely spotted with purple on yellowish, the epichile microscopically verrucose-denticulate, oblong-subpandurate, 10-12 mm long, 3.5-5 mm wide, the apex broadly truncate to shallowly retuse, the hypochile rounded, concave, with erect, smooth margins, each with a minute, capillary, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base connected to the column-foot by a thick, rigid, cylindrical neck; **column** white, suffused with purple, slender, clavate, 6 mm long, the base pedestal-like.

COLOMBIA: Dept. of Antioquia: Munic. of Ituango, Angostura, (**COLOR 12, LR**), alt. ca. 2000 m, collected by J. M. Sema in 1974, flowered in cultivation by O. Arango at La Estrella, 7 Oct. 1977, *R. Escobar 241* (Holotype: SEL; Isotype: JAUM), C. Luer illustr. 1947; same collection, flowered in cultivation at Colomborquídeas, 22 Mar. 1989, *C. Luer 14358* (MO); same collection, flowered in cultivation at Colomborquídeas, synsepal yellow, 9 May 1993, *C. Luer 16694* (MO). Without locality, from the collection of Rodolfo Bethke in Medellín, Colombia, A. Jesup #12, flowered in cultivation at Colomborquídeas, synsepal tan, 9 May 1993, *C. Luer 16695* (MO). Dept. of Santander: between Velez and Landazuri, alt. 2000 m, collected by L. Herrera, flowered in cultivation at Orquifollajes above Guame, 9 July 1996, *C. Luer 17984* (MO).
VENEZUELA: Mérida: between Carbonera and Chorotal, alt. 2300 m, 26 Mar. 1949, *J. Renz 5201* (Herb. J. Renz); Páramo El Tambor, Jaji, 2700 m, 27 Apr. 1949, *J. Renz 5348* (Herb. J. Renz).

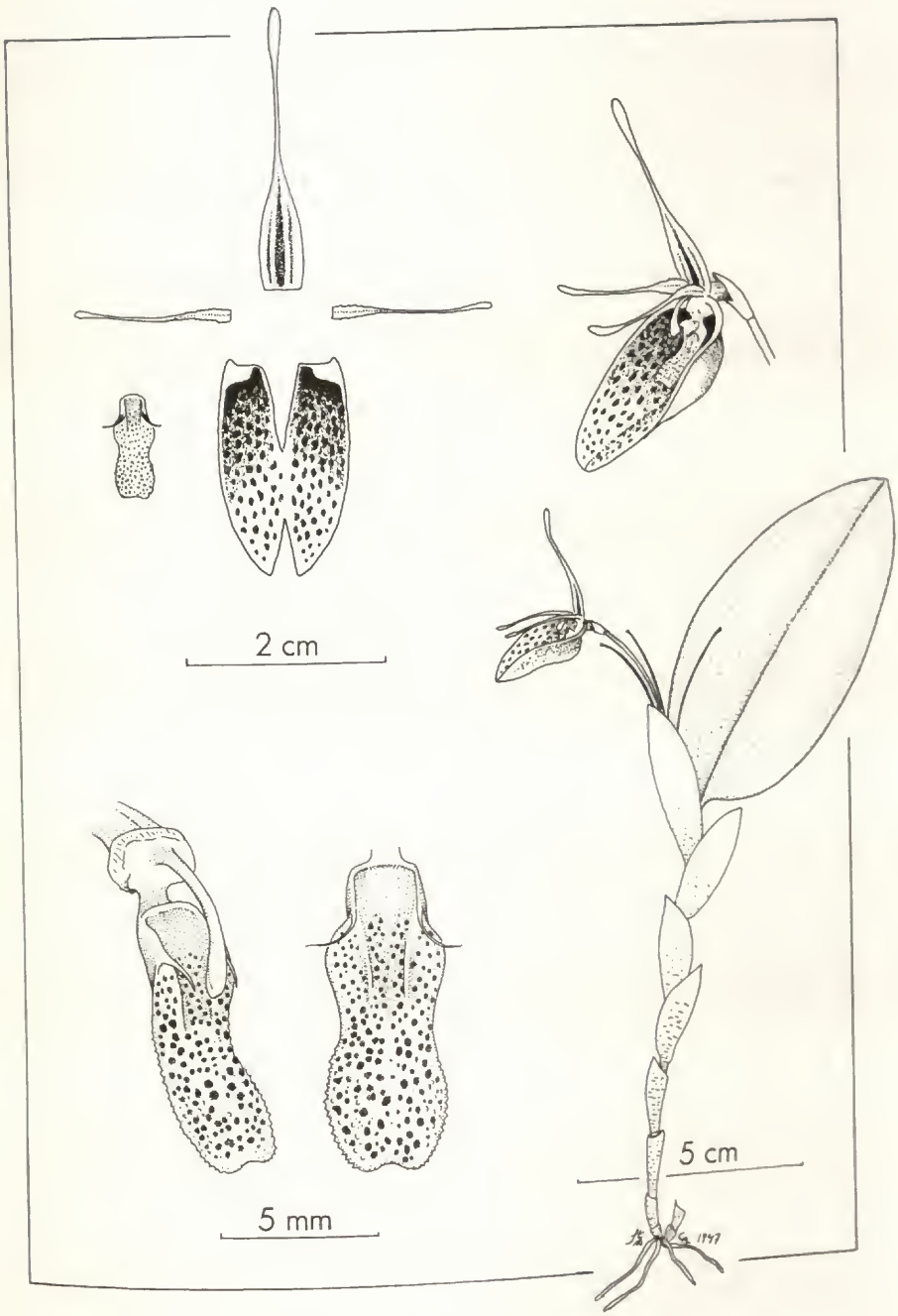


Plate 48. *Restrepia pelyx* Luer & Escobar

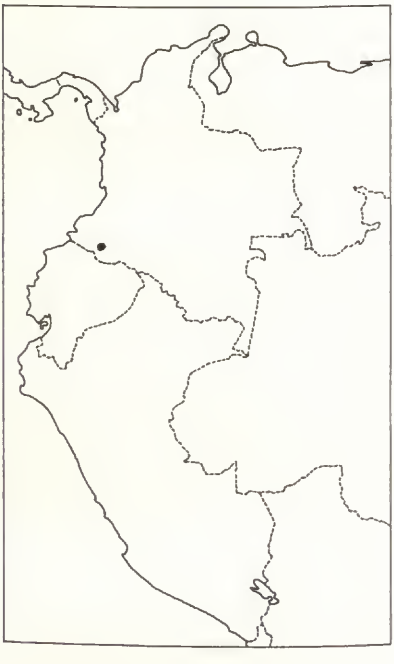
One population of this species is known from an area in the Central Cordillera of Colombia where it is relatively abundant. A second color-form (*A. Jesup #12*) is from an unknown locality. Renz had discovered it in western Venezuela. *Restrepia pelyx*, known in Colombia as "la taza" (the cup), is recognized by the large, purplish leaves and relatively large flowers borne by pedicels about half as long as the leaf. The cup-shaped synsepal is proportionately broad and deeply concave, and diffusely spotted with purple-brown except for two conspicuous white patches at the base. The base color of the synsepal is yellow in the plants from the known locality, and tan in those plants from the unknown locality.

Restrepia purpurea Luer & Escobar, Orquideología 20: 162, 1996.

Ety.: From the Latin *purpurea*, "purple," referring to the intensely purple-striped synsepal.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 3.5-8 cm long, enclosed by 5-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lower sheath spotted with black. **Leaf** erect, coriaceous, suffused with purple, ovate, obtuse, 4-5.5 cm long, 3-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 5-7 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back surface of the leaf; peduncle slender, 3-4 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 2 mm long, with a filament 2-3 mm long; ovary purple, lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent, veined in purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 22 mm long, 3 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical-obovate lamina, white, intensely striped with bright purple, confluent toward the base, 22 mm long, 11 mm wide expanded, 12-veined, the apex obtuse, minutely bifid; **petals** membranous, translucent white, veined in purple, narrowly linear-ovate, the margins microscopically cellular-erose near the base, attenuated above the middle with the apex clavate-thickened, 16 mm long, 1.75 mm wide at the base; **lip** orange-brown with 3 purple stripes, oblong, 9 mm long, 3 mm wide, the epichile oblong, retuse, with denticulate-fimbriate very slightly constricted below the middle, the hypochile suborbicular, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Nariño: Sotomayor, (**COLOR 13, UL**), collected by J. Aguirre, flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17545* (Holotype: MO); Sotomayor, alt. 1650, collected by J Aguirre in 1990, flowered in cultivation at Colomborquídeas, 6 Apr. 1988, *C. Luer 13060* (MO); same collection, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16666* (MO).



This species is very closely allied to the frequent and variable *R. brachypus*, and has been considered to be an unusual form limited to an area of southernmost Colombia, completely within the distribution of *R. brachypus*. However, *R. purpurea* is easily identified among plants of the former. *Restrepia purpurea* is distinguished by the smaller, stouter habit with broadly ovate, obtuse, dark purple leaves. The peduncles are only about half as long as the leaf, while those of *R. brachypus* are often as long as or longer than the leaf. The flowers of *R. purpurea* are smaller

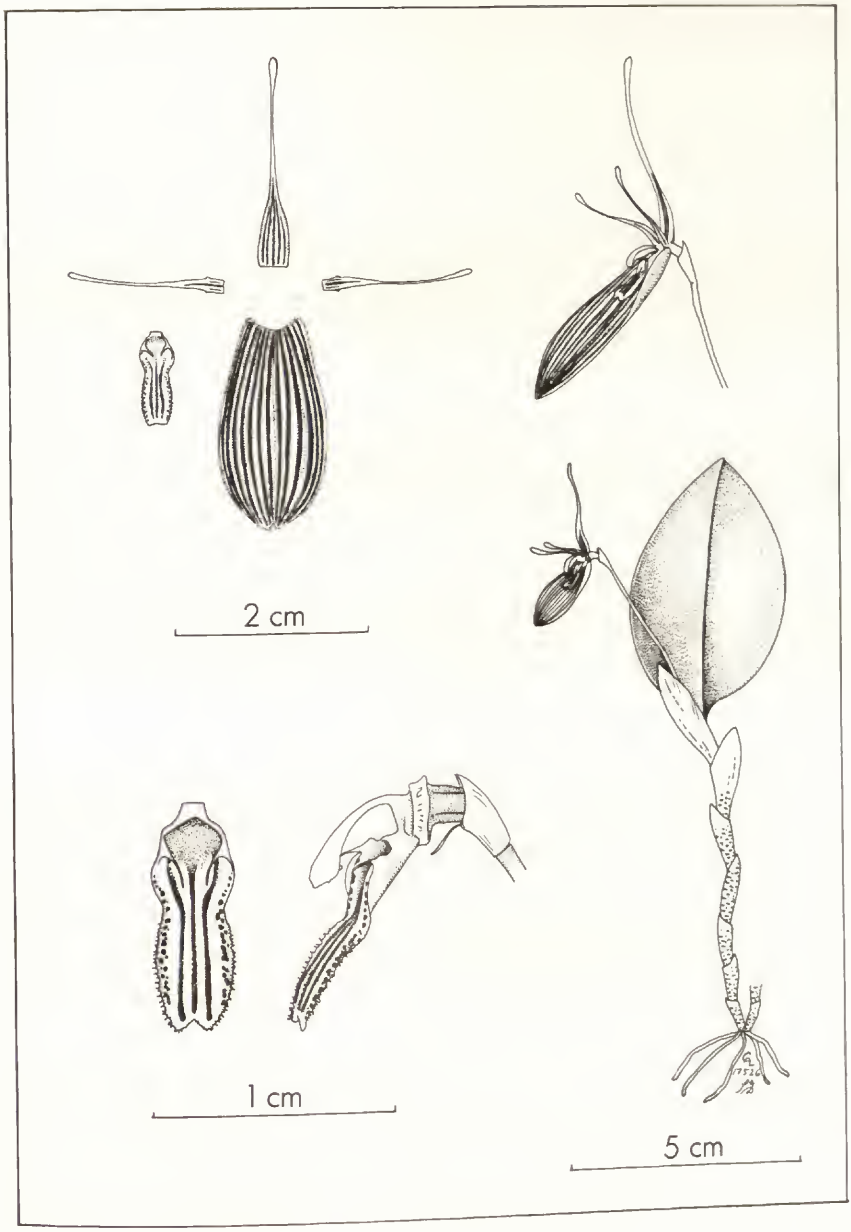


Plate 49. *Restrepia purpurea* Luer & Escobar

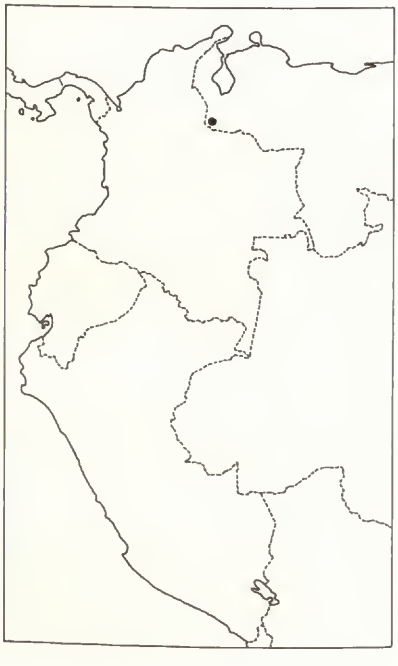
than the average flower of *R. brachypus*, and the synsepal is white instead of yellow, and prominently striped with much broader, bright purple stripes. The lip is oblong, broader than that of the usual *R. purpurea*, and barely narrowed near the middle instead of pandurate. The blades of both species are denticulate-fimbriate.

Restrepia radulifera Luer & Escobar, Orquideología 20: 165, 1996.

Ety.: From the Latin *radulifer*, "bearing a rasp," referring to the narrow, spiculate lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-10 cm long, enclosed by 5-6 whitish, compressed, unspotted, more or less imbricating sheaths. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, acute to subacute, 5-8 cm long, 2.5-3.5 cm wide, the base rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively up the back side of the leaf; peduncle slender, 7 cm long; floral bract thin, tubular, 8 mm long; pedicel stout, 2.5 mm long, with a short filament; ovary 5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein dark brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 43 mm long, 3.5 mm wide above the base, 5-veined, the lateral sepals connate into a narrowly oblong lamina, bifid at the obtuse apex, brown on lower third, orange on outer two-thirds, spotted with dark red-brown on lower third, spots much smaller on middle third, disappearing on distal third, 45 mm long, 10 mm wide, multiple-veined; **petals** membranous, translucent white, midvein dark brown, narrowly linear-triangular, 22 mm long, 1.3 mm wide above the base, both margins with a capillary process near the base, attenuated above the middle with the apex clavate-thickened; **lip** dull yellow-green, dotted with purple, narrowly oblong-pandurate, 13 mm long, the hypochile concave, 3 mm wide, with a pair of narrowly acute processes becoming capillary, the isthmus 1.3 mm wide, the epichile narrowly oblong, markedly spiculate, 2 mm wide, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** greenish white, slender, clavate, 6 mm long, the base pedestal-like with a pair of obtuse calli.

VENEZUELA: Edo. Táchira: Páramo de Tamá, **(COLOR 13, UR)**, alt. ca. 2500 m, collected by Norberto Valencia, July 1991, flowered in cultivation at Colomborquídeas, 7 July 1996, *C. Luer 17950* (Holotype: MO, Isotype: JAUM).



Vegetatively this species is similar to many of the medium-sized species of the genus with an ovate leaf. Near the apex of the leaf a large flower with a long, narrow, spotted synsepal is held. The synsepal is orange-brown with the dark brown spots disappearing toward the apex. The long, slender, narrowly pandurate lip is most distinctive, the oblong epichile being covered by minute spicules.

With a spotted synsepal and a long, narrow, bristly lip, *R. radulifera* is allied to *R. trichoglossa*, but is easily distinguished from the latter by the much larger size.

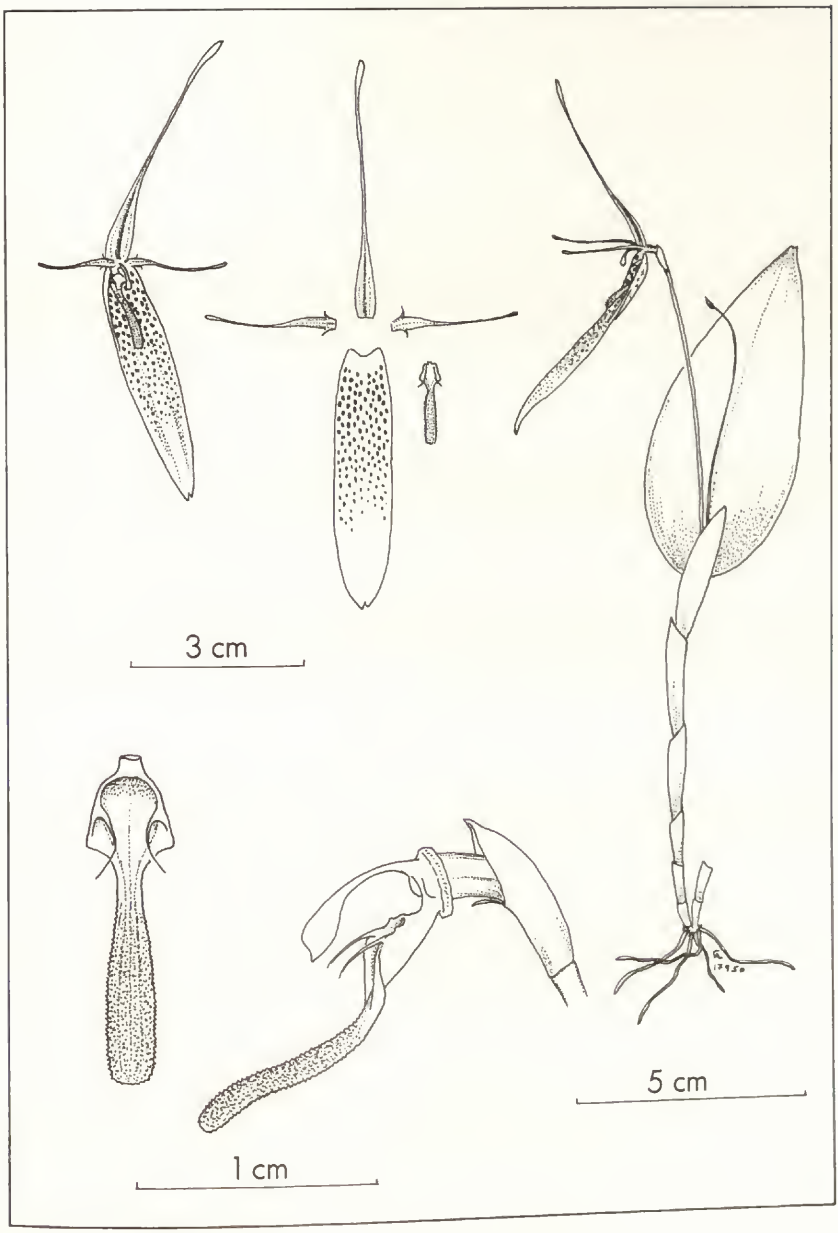


Plate 50. *Restrepia radulifera* Luer & Escobar

Restrepia renzii Luer, Orquideología 20: 167, 1996.

Ety.: Named in honor of Dr. Jany Renz of Basel, Switzerland, who collected this species.

Plant medium in size to large, epiphytic, caespitose; roots slender. Ramicauls erect, 6-10 cm long, enclosed by 5-8 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost more or less dotted black. **Leaf** erect, coriaceous, elliptical-ovate, subacute, 5-6.5 cm long, 2.8-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 3-3.5 cm long; floral bract thin, tubular, 4.5 mm long; pedicel stout, 3 mm long, with a short filament; ovary purplish, lightly sulcate, 2 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 1 mm thick at the apex, 16 mm long, 1.5 mm wide above the base, the lateral sepals connate to near the apex into a shallowly concave, more or less obovate lamina, light green with wine red dots, 15 mm long, 7.5 mm wide expanded, multiveined, the apex obtuse, shortly bifid; **petals** membranous, translucent white, narrowly linear-triangular, both margins with a capillary process above the base, attenuated above the middle with the apex clavate-thickened, 11 mm long, 1 mm wide at the base; **lip** cream-colored, flecked or dotted with purple-brown, oblong, 7.5 mm long, 2 mm wide, the epichile 3-veined, minutely fringed, minutely papillose, the apex truncate, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a broad, rigid, cylindrical neck; **column** white, slender, clavate, 3-4 mm long, the base pedestal-like with a pair of obtuse calli.

VENEZUELA: Edo. Mérida: Around Mérida, from El Valle toward Cordillera del Norte, alt. 2400 m, 19 July 1951, *J. Renz 7277* (Holotype: Herb. J. Renz; Isotype: MO), C. Luer illustr. 17732; around Mérida, between Las Cruces and upper Gonzáles Valley, alt. 2500 m, 27 Mar. 1955. *J. Renz 8386* (Herb. J. Renz).

This species was discovered in 1951 by Dr. Jany Renz in the mountains around Mérida in western Venezuela. Although the flowers seem very similar to those of *R. lansbergii* of coastal Venezuela, the comparatively large habit with proportionately small flowers borne by relatively short peduncles distinguish the species.

Vegetatively, *R. renzii* is indistinguishable from many medium- to large-sized species. The leaves are comparatively large and broad. The peduncles do not quite reach the middle of the leaf in length. The flowers are proportionately small with the sepals about 15 mm long. The spotted synsepal is more or less obovate or dilated above the middle as seen in *R. lansbergii*. *Restrepia renzii* is further distinguished by capillary processes on the margins of the petals above the base, and the oblong epichile of the lip that is finely fringed.

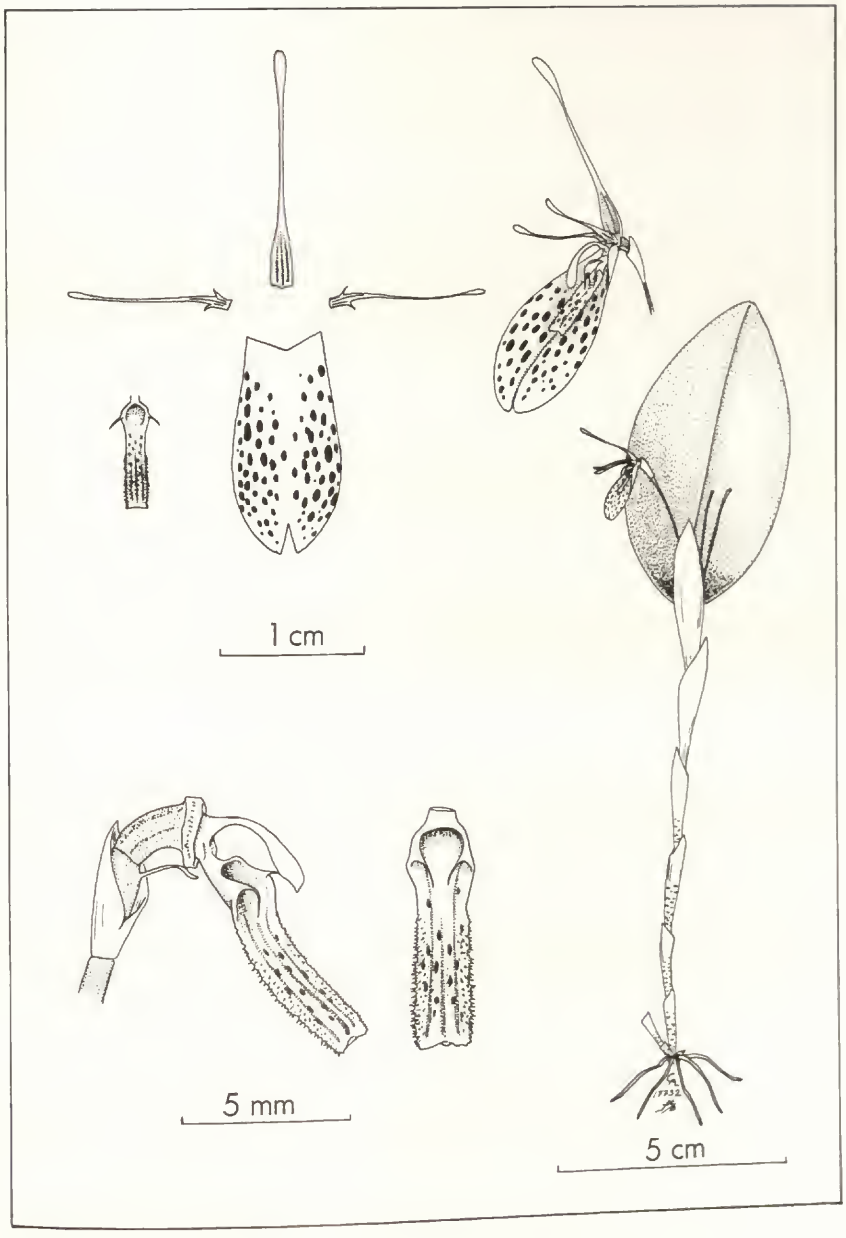


Plate 51. *Restrepia renzii* Luer

Restrepia roseola Luer & Escobar, Orquideología 20: 170, 1996.

Ety.: From the Latin *roseolus*, "pink, pale rose," referring to the color of the synsepal.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-7 cm long, enclosed by 5-6 thin, whitish, loose, compressed, imbricating sheaths, the lower sheaths sparingly spotted with black. **Leaf** erect, coriaceous, suffused with purple, ovate, subacute to obtuse, 3.5-4.5 cm long, 2-2.5 cm wide, the base broadly cuneate, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back surface of the leaf; peduncle slender, 3.5-4 cm long; floral bract thin, tubular, 5 mm long; pedicel stout, 2.5 mm long, with a filament 2 mm long; ovary lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent, veined in red-purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 18-22 mm long, 2 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, obovate lamina, pale rose, minutely dotted with purple in rows to near the apices where the dots disappear, 18-22 mm long, 9-11 mm wide expanded, 12-veined, the apex obtuse, shortly bifid; **petals** membranous, translucent white, veined in red-purple, narrowly linear-ovate, the margins microscopically cellular-erose near the base, attenuated above the middle with the apex slightly clavate-thickened, 16 mm long, 1 mm wide at the base; **lip** orange with purple spots, oblong, 8 mm long, 2.6 mm wide expanded, the epichile elliptical-oblong, retuse, convex with the sides decurved, 2 mm wide in the natural position, with the margins microscopically erose, very slightly constricted below the middle, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a slender, cylindrical neck; **column** white, slender, clavate, 4 mm long, the base pedestal-like with a pair of obtuse, yellow calli.

Without collection data, (**COLOR 13, LL**), reportedly obtained by Ann Jesup, A. Jesup #4, from B. Berliner, a division to R. Escobar, RE 3327, 14 Oct. 1985, flowered in cultivation at Colomborquídeas, 5 July 1996, *C. Luer 17948* (Holotype: MO; Isotype: JAUM); same collection. flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16691* (MO). VENEZUELA: Edo. Aragua: forest remnant, ridge north of Tiara, alt. 1300 m, May 1978, *G. C. K. Dunsterville illustr. 1397.*

This species from the coastal mountains of Venezuela is illustrated by Dunsterville in *Orchids of Venezuela, An Illustrated Field Guide*, and erroneously identified as *R. schlimii*, a distinctly different species synonymous with *nittiorhyncha* from the Eastern Cordillera of Colombia. The origin of the plant presently cultivated in several collections and illustrated herein is uncertain, but it is the same species from coastal Venezuela illustrated by Dunsterville. It is possible that the plant was obtained by Dr. Ben Berliner, Bloomfield, CT, from Dorothy Lankester, San José, Costa Rica, who had obtained plants from Dunsterville.

Similar both vegetatively and florally to *R. elegans* with which it is sympatric in the coastal mountains of Venezuela, this species is distinguished by the minute, purple dots arranged in rows on a rose-colored synsepal. Most distinguishing is the longitudinally convex lip with modestly revolute, microscopically erose margins. The lip illustrated by Dunsterville has been expanded.

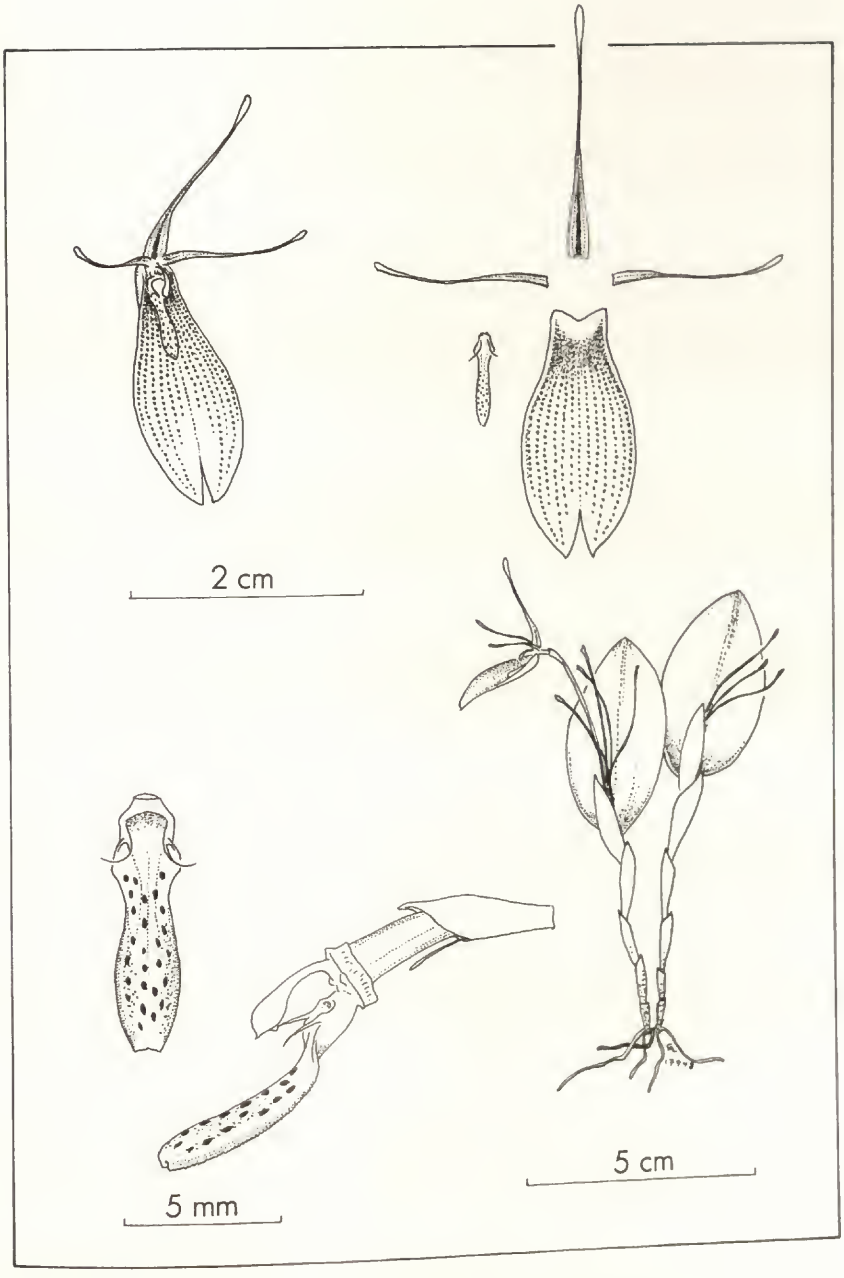


Plate 52. *Restrepia roseola* Luer & Escobar

Restrepia sanguinea Rolfe, Bull. Misc. Inform. 44, 1896

Ety.: From the Latin *sanguineus*, "blood-colored," referring to the color of the flower.

Syn.: *Restrepia antioquiensis* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 118, 1920.
Ety.: Named for the department of Colombia where the species was discovered.

Syn.: *Pleurothallis antioquiensis* (Schltr.) P. Allen, Revista Fac. Nac. Agron. Medellín Univ, Antioquia 8(32): 422, 1948.

Plant medium in size to large, epiphytic, densely caespitose; roots slender. Ramicauls erect, 5-13 cm long, enclosed by 5-7 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost barely dotted with black. **Leaf** erect, coriaceous, more or less suffused with purple, elliptical-ovate, acute, 5-10 cm long including the petiole ca. 1 cm long, 2-4 cm wide, the base cuneate, contracted into the petiole. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 4-6 cm long; floral bract thin, tubular, 5-6 mm long; pedicel stout, 4-6 mm long, with a short filament; ovary purplish, lightly sulcate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 18-34 mm long, 2-3 mm wide, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical lamina, whitish or yellowish, densely spotted in coalescing rows of intense purple, becoming solid toward the base except for an unpigmented area on either side of the base along the margins, 18-33 mm long, 10-13 mm wide expanded, multiple-veined (more or less 16-veined), the apex obtuse, minutely bifid; **petals** membranous, translucent white, with a purple midvein, narrowly linear-triangular, with the margins smooth, attenuated above the middle with the apex clavate-thickened, 21-24 mm long, 1.5 mm wide at the base; **lip** yellowish, obscured by intense, brownish dots, bright rose at the base, oblong, 10-14 mm long, 2.5-4 mm wide, the epichile obscurely to distinctly dilated above the middle, more or less truncate, minutely scabrous with minutely denticulate margins, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** yellowish white, slender, clavate, ca. 7 mm long, the base pedestal-like with a pair of obtuse, yellow calli.

COLOMBIA: Without collection data, flowered in cultivation Nov. 1895 by *Messrs. Charlesworth & Co. s.n.* (Holotype: K); presumably same plant or division of same plant, flowered in cultivation at Kew at a later date (K), C. Luer illustr. 17741. Dept. of Antioquia: La Ceja, Río Piedras, (**COLOR 14, UL**, striped), alt. 2500 m, collected by R. Escobar et al., flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16664* (Neotype here designated: MO); Río Piedras, flowered in cultivation at La Ceja by M. & O. Robledo, 23 Oct. 1978, *C. Luer 3466* (SEL); El Roble, 4 Km west of Represa de Miraflores, alt. 2050 m, 8 Feb. 1986, *B. A. Stein & A. Cogollo 3409* (MO); Yarumalito, Represa de Miraflores, (**COLOR 14, UR**, spotted), alt. 2500 m, collected by R. Escobar et al., flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 16665* (MO); Sonsón, Quebrada Oscura, alt. 2000 m, collected by R. Escobar, 1977, flowered in cultivation at Colomborquídeas, 15 May 1993, *R. Escobar s.n.* (JAUM). Without locality, alt. 1500 m, *M. Madero s.n.* (type of *R. antioquiensis* destroyed at B). Dept. of Cundinamarca: Granada, alt. 2200 m, collected by G. Ruiz, 1983, flowered in cultivation at Colomborquídeas, 9 June 1996, *R. Escobar s.n.* (JAUM).

As usual with most of Rolfe's species of pleurothallids, *R. sanguinea* was described without collection data, but in this case at least "Colombia" is given as the origin. It was imported by Messrs. Charlesworth & Co., flowering first in November 1895. The only two leaves preserved are small, most probably made from a depauperate, cultivated plant. Apparently the plant or divisions of the plant survived in cultivation at Kew for many years because additional flowers were added to the envelope on the type-sheet in 1899, 1903, 1916 and 1924.

The description of the "wholly crimson flowers, with the exception of a small yellow blotch at . . . the extreme base of the lateral sepals" applies only to a species

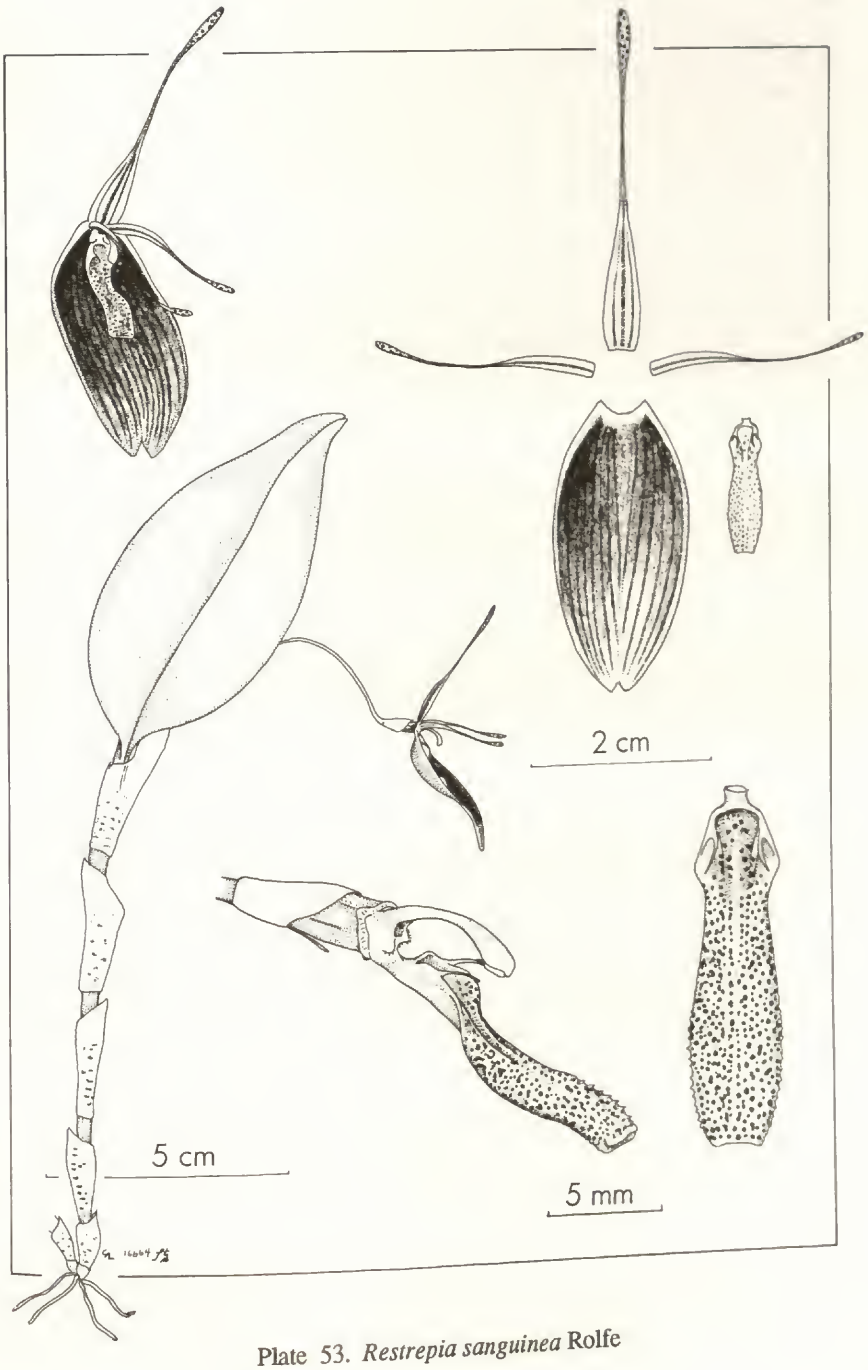


Plate 53. *Restrepia sanguinea* Rolfe

found abundantly in several localities near Medellín. Vegetatively the numerous plants of this species cultivated at Colomborquídeas are mostly considerably larger, but the plants as well as the flowers vary considerably in size. Smaller-flowered clones with sepals about 20 mm long are morphologically the same as one of the hydrated flowers from the type-sheet. The Madero collection described as *R. antioquiensis* by Schlechter is undoubtedly referable to this species.

Vegetatively *R. sanguinea* is not readily distinguishable from the multitude of other medium- to large-sized species. The flowers are borne by peduncles usually a little more than half the length of the leaf. The synsepals are concave, usually dark blood red with coalescing stripes or rows of spots that fuse toward the base where a conspicuous whitish area is present along the margin. The margins of the petals are sometimes only barely toothed near the base. The lip is oblong and truncate, only slightly narrowed below the middle, the blade being variously dilated and minutely denticulate-scabrous.

Restrepia schizosepala Luer & Hirtz, Orquideología 20: 172, 1996.

Ety.: From the Greek *schizosepalum*, "a split sepal," referring to the forked synsepalum.

Plant medium in size, epiphytic, caespitose; roots slender. **Ramicauls** erect, 8-11 cm long, enclosed by 8-9 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost sheaths with black dots in bars. **Leaf** erect, coriaceous, suffused with purple beneath, ovate, subacute, 4-5 cm long, 2.5-3 cm wide, the base broadly cuneate or rounded, contracted into a petiole of negligible length. **Inflorescence** a solitary flower, produced successively in a fascicle up the back of the leaf; peduncle slender, 4 cm long; floral bract thin, tubular, 7 mm long; pedicel stout, 3 mm long, with a filament equally long; ovary lightly sulcate, 4-5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent, with the midvein red-purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate, 25 mm long, 3.5 mm wide above the base, 5-veined, the lateral sepals connate 10 mm into a bifid lamina, shallowly concave toward the base, dark orange, dotted with red-purple below the middle, each sepal narrowly elliptical, oblique, acute, 25 mm long, 6 mm wide, free for 15 mm, the apices acute; **petals** membranous, translucent, with the midvein and margins suffused with purple, narrowly linear-ovate, the margins entire, attenuated above the middle with the apex clavate-thickened, 15 mm long, 1.6 mm wide above the base; **lip** orange, darker centrally with a few spots, oblong, minimally pandurate, 11 mm long, 3-3.5 mm wide, the epichile oblong, minutely verrucose and minutely denticulate, the apex subtruncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a short, capillary, uncinate processes, the disc with a pair of low carinae extending forward from the bases of the processes onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of yellow, obtuse calli.

ECUADOR: Prov. of Sucumbíos: near La Bonita, **(COLOR 13, LR)**, collected by J. Del Hierro, flowered in cultivation in Quito, Feb. 1995, by *A. Hirtz 6230* (Holotype: MO), C. Luer illustr. 17746.

This species is apparently endemic in northeasternmost Ecuador where it has been recently discovered. No other member of the genus is known from this area. Although very similar to the group of taxa related to *R. contorta*, *R. schizosepala* is immediately distinguished by the split synsepal. The synsepal of a few other species may occasionally split spontaneously near the tip as the flower ages, but in no other species is the split constant and so deep. The sepals are orange in color with

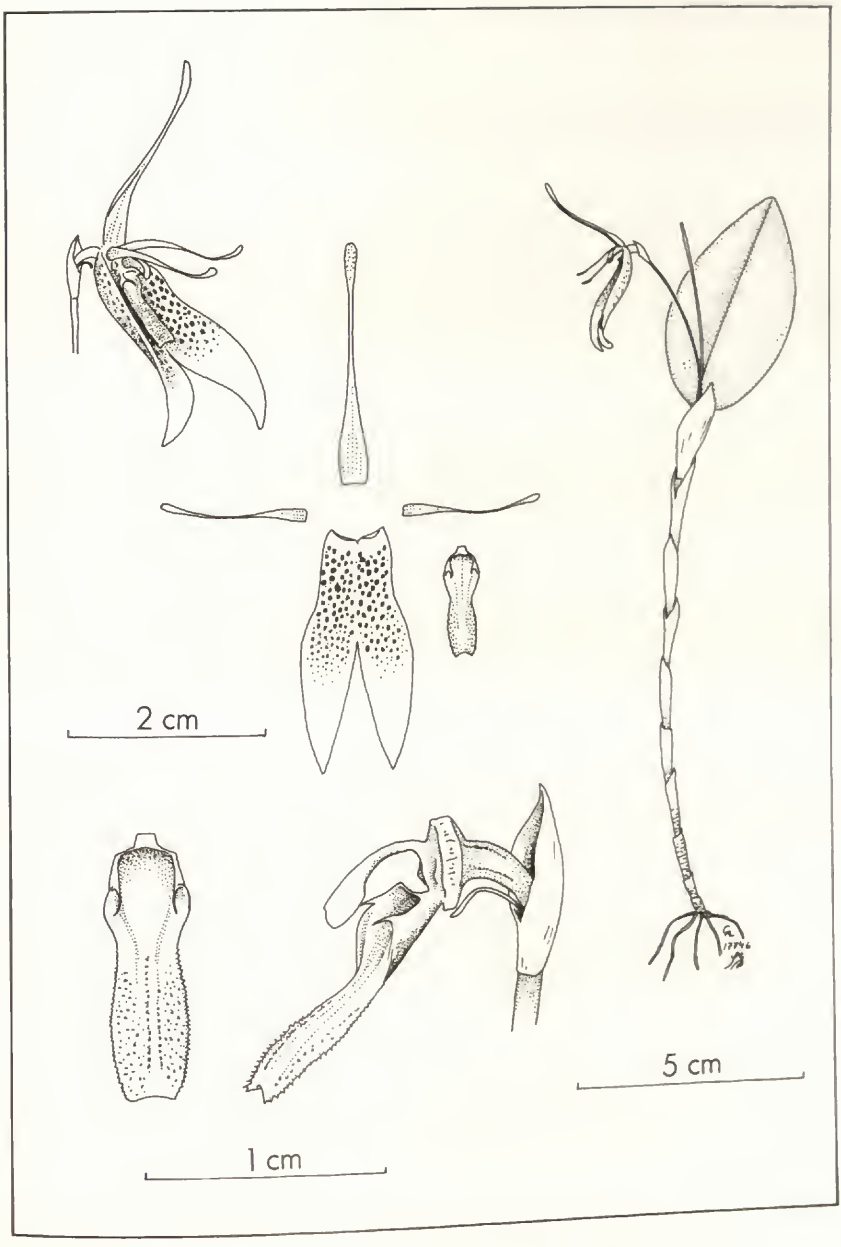


Plate 54. *Restrepia schizosepala* Luer & Hirtz

small spots below the middle. The free portions are unmarked orange, The margins of the petals are entire. The oblong lip is proportionately large, similar to that of *R. guttulata*.

Restrepia seketii Luer & Escobar, Orquideología 20: 175, 1996.
Ety.: Named in honor of Robert Seket, formerly of Medellín, Colombia

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 6-8 cm long, enclosed by 5-6 thin, whitish, loose, compressed, more or less imbricating sheaths, more or less dotted with black. **Leaf** erect, coriaceous, more or less suffused with purple beneath, ovate, subacute, 4-5.5 cm long, 2.5-3.7 cm wide, the base rounded, contracted into a twisted petiole 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-5 cm long; floral bract thin, tubular, 6 mm long; pedicel stout, 5 mm long, with a short filament 2 mm long; ovary purple, lightly sulcate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 27 mm long, 2.25 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into an elliptical-obovate lamina, shallowly concave at the base, with the sides more or less involute below and near the middle, white, spotted with bright rose-purple, the spots larger and confluent below the middle, 25 mm long, 8.5 mm wide expanded, multiple-veined, the apex subacute to obtuse, minutely bifid; **petals** membranous, translucent white, veined in purple, narrowly linear-triangular below the middle, the margins smooth, attenuated above the middle with the apex clavate-thickened, 15 mm long, 0.8 mm wide at the base; **lip** white, diffusely dotted with rose, oblong, 7 mm long, 2 mm wide, very slightly (if at all) narrowed between the middle and lower thirds, the epichile oblong, entire, smooth, the apex deeply retuse or forked with the apices subacute, the hypochile subquadrate, proportionately short, concave with thin, erect margins, each side with a thin, attenuated, uncinate process, the disc with a an obscure, low pair of carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** yellowish white, slender, clavate, 3.5 mm long, the base pedestal-like with a pair of low, obtuse calli.

COLOMBIA: Dept. of Magdalena: Sierra Nevada de Santa Marta, **(COLOR 14, LL)**, collected by R. Seket, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16658A* (Holotype: JAUM; Isotype: MO); same collection, flowered in cultivation at Colomborquídeas, 17 Apr. 1983, *C. Luer 8720* (SEL).

This species, apparently endemic on the forested slopes of the Sierra Nevada de Santa Marta, is known only by Seket's original collection. Although basically similar to most other medium-sized species of the genus, *R. seketii* is distinguished by an obovate, purple-spotted synsepal, sigmoid in outline when viewed laterally, with erect to involute margins below and near the middle; smooth-margined petals; and an oblong lip with a bifid apex. The smooth, entire blade, or epichile of the lip, is proportionately long compared to a proportionately small hypochile.

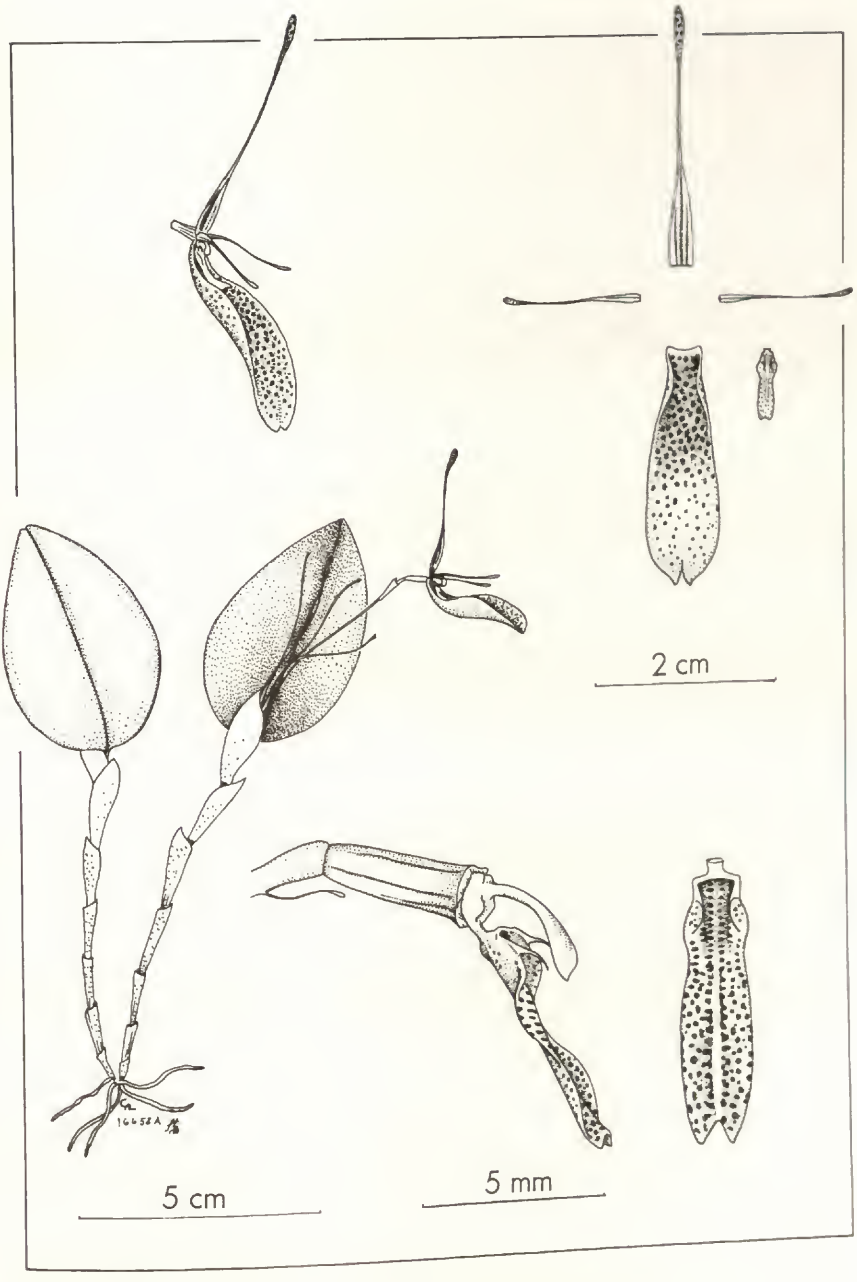
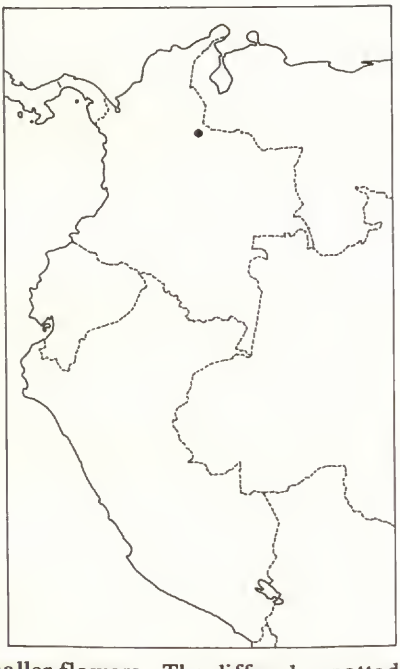


Plate 55. *Restrepia seketii* Luer & Escobar

Restrepia tabeae Mohr, Leafl. Schltr. Instit. 2: 10, 1996.
Ety.: Named by Mohr for his daughter.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 4-8 cm long, enclosed by 4-6 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, lightly dotted with black. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, subacute to obtuse, 4-6 cm long, 3-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole ca. 1 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle near the base of the back of the leaf; peduncle slender, 2-2.5 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 2 mm long, with a minute filament; ovary dark purple-brown, arcuate, lightly costate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, with the midvein purple-brown, more or less spotted with purple, narrowly ovate below the middle, attenuated above the middle with the apex minutely clavate, 22-24 mm long, 3 mm wide above the base, 5-veined, the lateral sepals connate to near the apex into an elliptical lamina, microscopically pubescent, concave basally, pale yellow, diffusely spotted with purple, 22-24 mm long, 9-11 mm wide expanded, the apex obtuse, minutely bifid; **petals** membranous, translucent white with the midvein purple and a purple spot at the base, narrowly ovate-triangular below the middle, the margins each with a papillary process, attenuated above the middle with the apex minutely clavate-thickened, 11 mm long, 1.5 mm wide above the base; **lip** yellowish, diffusely spotted with purple-brown, oblong, 7-7.5 mm long, 3 mm wide, the epichile oblong, microscopically verrucose-serrate, the apex truncate-retuse, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process as well as 1-2 lesser processes, the disc with a low carina extending forward from the base of each process onto the epichile, the base truncate, connected to the column-foot by a stout, cylindrical neck; **column** greenish white, slender, clavate, 4-5 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Norte de Santander: purchased without collection data, flowered in cultivation, without further data, (Holotype: Herb. Schltr. Instit; Isotype: W); Toledo, Alto de Santa Inéz, (**COLOR 14, LR**), epiphytic in cloud forest, alt. 2150 m, 23 May 1982, *C. Luer, R. Escobar & D. Portillo 7938* (SEL); same collection, flowered in cultivation at Colomborquídeas, 29 Apr. 1984, *C. Luer 10033* (MO); same area, alt. 2100 m, *C. Luer, J. Luer, R. Escobar & E. Valencia 10322* (MO); same collection data, flowered in cultivation in Guatemala, 15 Feb. 1990, *M. Béhar 39* (MO); same collection data, flowered in cultivation at Colomborquídeas, 9 May 1993, *C. Luer 16679* (MO).



This species is known from the Eastern Cordillera of Colombia where it was first collected in 1982 by Escobar, Luer & Portillo while searching for "lost" species of *Masdevallia*. It is related to *R. aristulifera* which is known to occur farther north also in the department of Norte de Santander. This species no doubt also occurs in adjacent Venezuela.

Restrepia tabeae differs from *R. aristulifera* by the smaller habit and slightly smaller flowers. The diffusely spotted flowers are produced by shorter peduncles so that they appear near the base of the back of the leaf, in a manner similar to *R. muscifera*. The tips of the dorsal sepal and petals are only shortly and minutely clavate. The aristate processes of the margins of the petals near the base are more prominent that those of *R. aristulifera*. As in the latter, the uncinate processes on the margins of the hypochile of the lip are accompanied by a smaller process on the basal side in the specimens examined.

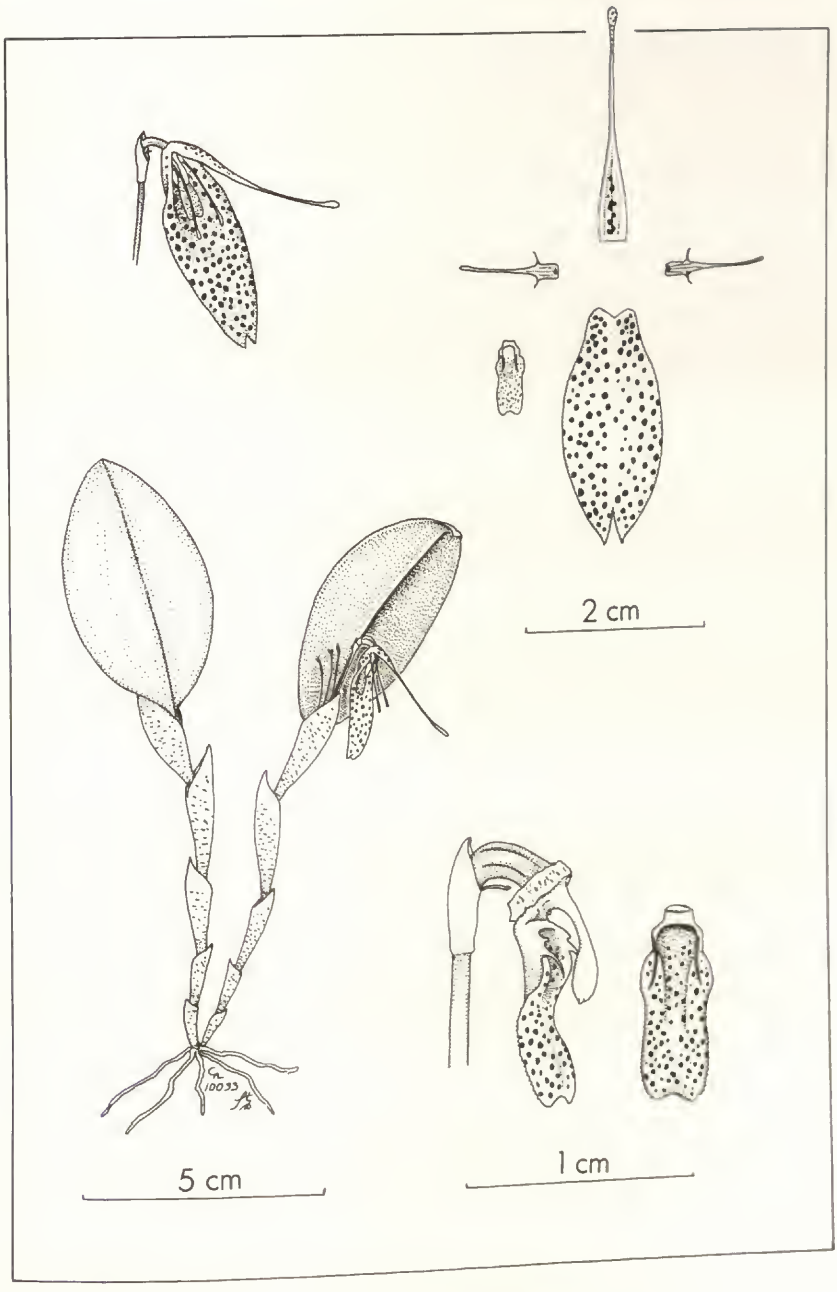


Plate 56. *Restrepia tabeae* Mohr

Restrepia teaguei Luer, Phytologia 46: 384, 1980.

Ety.: Named in honor of Walter Teague of San Francisco, CA, who collected this species in 1979.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 4-8 cm long, enclosed by 4-8 thin, whitish, loose, oblique, compressed, more or less imbricating sheaths with multiple, black spots. **Leaf** erect, coriaceous, suffused with purple beneath, elliptical-ovate, subacute to obtuse, 3-5.5 cm long, 2-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, 3-4.5 cm long; floral bract thin, tubular, 4-5 mm long; pedicel stout, 2-3 mm long, with a short filament; ovary lightly costate, 4 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, 5-veined with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 24 mm long, 3 mm wide above the base, the lateral sepals orange in the middle third, bright rose-red on the apical and basal thirds, diffusely dotted with dark purple, connate to the apex into a more or less flat, elliptical lamina, narrowed above and below the middle, 24 mm long, 9 mm wide, the apex acute, minutely bifid; **petals** membranous, translucent white with a purple midvein, narrowly ovate in the lower third, the margins minutely fimbriate, attenuated above the middle with the apex minutely clavate-thickened, 15 mm long, 1.5 mm wide above the base; **lip** orange, dotted with red-brown, oblong-subpandurate, 7.5 mm long, 2.5 mm wide, the epichile subtruncate-retuse, at most cellular-glandular, the hypochile subquadrate, concave with thin, erect margins, each side with a minute, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, slender, clavate, 4 mm long, the base pedestal-like.

ECUADOR: Prov. of Zamora-Chinchipe: epiphytic in cloud forest between Loja and Zamora, (**COLOR 16, UL**), alt. 1600 m, collected by W. Teague in July 1975, flowered in cultivation in San Francisco, 20 Aug. 1979, *C. Luer 4101* (Holotype: SEL); same area, alt. 1500 m, 3 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12597* (K, MO).

This species has been in cultivation since the 1950's when it was exported by the late José Strobel of Cuenca. It was described from a later collection by Walter Teague. It is known to be locally abundant at medium altitudes on the eastern slopes of only one valley of southeastern Ecuador.

Restrepia teaguei is distinguished by the small habit; brightly multicolored, medium-sized flowers; a spindle-shaped synsepal noticeably narrowed to an acute apex; and an oblong, essentially glabrous lip. The closely allied *R. condorensis* from the nearby Cordillera del Condor is distinguished by larger flowers and a pandurate lip with fringed margins.

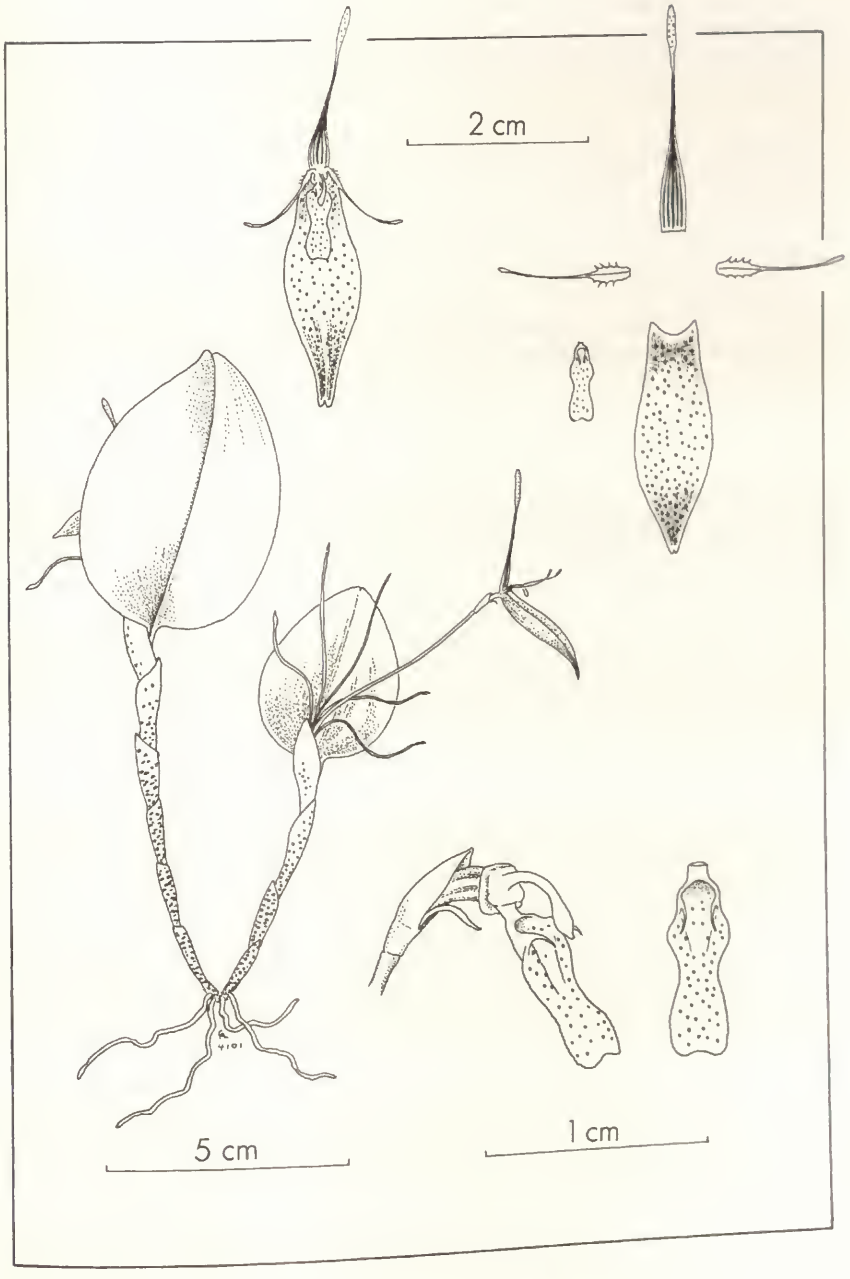


Plate 57. *Restrepia teaguei* Luer

Restrepia trichoglossa F.Lehm. ex Sander, Orchid Guide 215, 1901.

Ety.: From the Greek *trichoglossa*, "a hairy tongue," referring to the fimbriate lip.

Syn.: *Restrepia trichoglottis* hort. ex Gentil, Pl. Cult. Serres Jard. Bot. Brux. 166, 1906, *sphalm.*

Syn.: *Restrepia leontoglossa* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 120, 1920.
Ety.: From the Greek *leontoglossa*, "lion-tongued," referring to the verrucose-fringed lip.

Syn.: *Restrepia serrilabia* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 121, 1920.
Ety.: From the Latin *serrilabius*, "with serrated lip," referring to the labellum.

Syn.: *Restrepia angustilabia* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 290, 1923.
Ety.: From the Latin *angustilabius*, "with a narrow lip," referring to the labellum.

Syn.: *Restrepia subserrata* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 291, 1923.
Ety.: From the Latin *subserratus*, "lightly serrated," referring to the lip.

Syn.: *Restrepia filamentosa* Ames & C.Schweinf., Sched. Orchid. 8: 19, 1925.
Ety.: From the Latin *filamentosus*, "with a filament," referring to the presence of the filamentous process found on the pedicel.

Syn.: *Pleurothallis filamentosa* (Ames & C.Schweinf.) L.O.Williams, Bot. Mus. Leafl. 8: 144, 1940.

Syn.: *Pleurothallis subserrata* (Schltr.) L.O.Williams, Bot. Mus. Leafl. 8: 144, 1940.

Syn.: *Restrepia antennifera* subsp. *leontoglossa* (Rchb.f.) Mohr, Leafl. Schltr. Instit. 2: 13, 1996.

Syn.: *Restrepia brachypus* subsp. *serrilabia* (Schltr.) Mohr, Leafl. Schltr. Instit. 2: 13, 1996.

Syn.: *Restrepia angustilabia* subsp. *subserrata* (Schltr.) Mohr, Leafl. Schltr. Instit. 2: 14, 1996.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 2-9 cm long, enclosed by 4-8 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, the lowermost sometimes finely dotted in black. **Leaf** erect, coriaceous, often suffused with purple beneath, elliptical-ovate, acute to subacute, 3-6 cm long, 1.5-3 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 3-4 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back of the leaf; peduncle slender, 3-6.5 cm long; floral bract thin, tubular, 2-5 mm long; pedicel stout, 3-6 mm long, with a short filament; ovary lightly sulcate, often striped in purple, 2-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, 5-veined with the midvein purple, narrowly ovate above the base, attenuated above the middle with the apex clavate-thickened, 16-23 mm long, 1.5-2 mm wide, the lateral sepals connate to near the apex into a concave, ovate lamina, bright yellow, pale yellow, to pale rose, with thin red to brown parallel lines, fragmented lines, to small red-brown or purple spots, mostly below the middle, often disappearing toward the apex, sometimes completely striped, sometimes diffusely dotted, 16-23 long, 5-8 mm wide, the apex narrowly obtuse, minutely bifid; **petals** membranous, translucent white, often with a dark spot at the base, narrowly linear-triangular, either margin with or without a minute, capillary process near the base, attenuated above the middle with the apex clavate-thickened, 14-18 mm long, 0.75-1 mm wide at the base; **lip** yellow or orange, flecked with brown or purple, narrowly subpandurate, 6-9 mm long, 1-1.8 mm wide, the epichile narrowly oblong, variously verrucose with denticulate to fimbriate margins, the apex truncate to retuse, the hypochile subquadrate, concave with thin, erect margins, each side with an acute, narrowly triangular process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a rigid, cylindrical neck; **column** white, often suffused with rose, slender, clavate, 3-4 mm long, the base pedestal-like with a pair of obtuse calli.

COLOMBIA: Dept. of Cauca: in trees of moist forest, highlands of Popayán, alt. 1600-2000 m, *F. C. Lehmann B.T. 1312* (Lectotype: K; Isolectotypes: AMES, W); Cauca without locality, alt. ca. 1400 m, *M. Madero s.n.* (type of *R. serrilabia* destroyed at B, no isotypes known); Hda. La Colonia near Popayán, Quebrada Guangubio, (**COLOR 15, UL**, spotted), alt. 1700 m, collected by R. Escobar & C. Luer, Nov. 1982, flowered in cultivation at Colomborquídeas, 5 May 1993, *C. Luer 17548* (Neotype of *R. serrilabia* here designated: MO); Cauca without locality, alt. ca. 1000 m, *M. Madero s.n.* (type of *R. leontoglossa* destroyed at B, no isotypes known); Cauca, without specific locality, (**COLOR 15, UR**, striped), flowered in cultivation at Colomborquídeas, 23 May 1995, *C. Luer 17618* (Neotype of *R. leontoglossa* here designated: MO); west of Popayán, alt. 1500-1800 m, *F. C. Lehmann 5508* (AMES, W); Clusquio, alt. 1700 m, 25 Sept. 1935, *K. von Sneidern 1050* (S); Munchique, alt. 2000 m, 13 June 1936, *K. von Sneidern 734* (S); El Tambo, alt. 1700 m, 20 Nov. 1939, *K. von Sneidern 2038* (AMES, K, S); Popayán, Valle de Pubenza, alt. 1700 m, collected by R. de Angelo, flowered in cultivation at Colomborquídeas, 6 July 1996, *C. Luer 17964* (MO). Dept. of Antioquia: Andes, Santa Inés, collected by J. M. Serna, May 1975, flowered in cultivation at Estrella by O. Arango, 3 Oct. 1977, *C. Luer 1892* (SEL). Dept. of Risaralda: near Pereira, cultivated by S. Tsubota, 10 May 1993, *C. Luer 16769* (MO). Dept. of Valle del Cauca: between Cali and Buenaventura, alt. 1500 m, 3 July 1965, *C. H. Dodson & H. Hills 3231* (SEL).

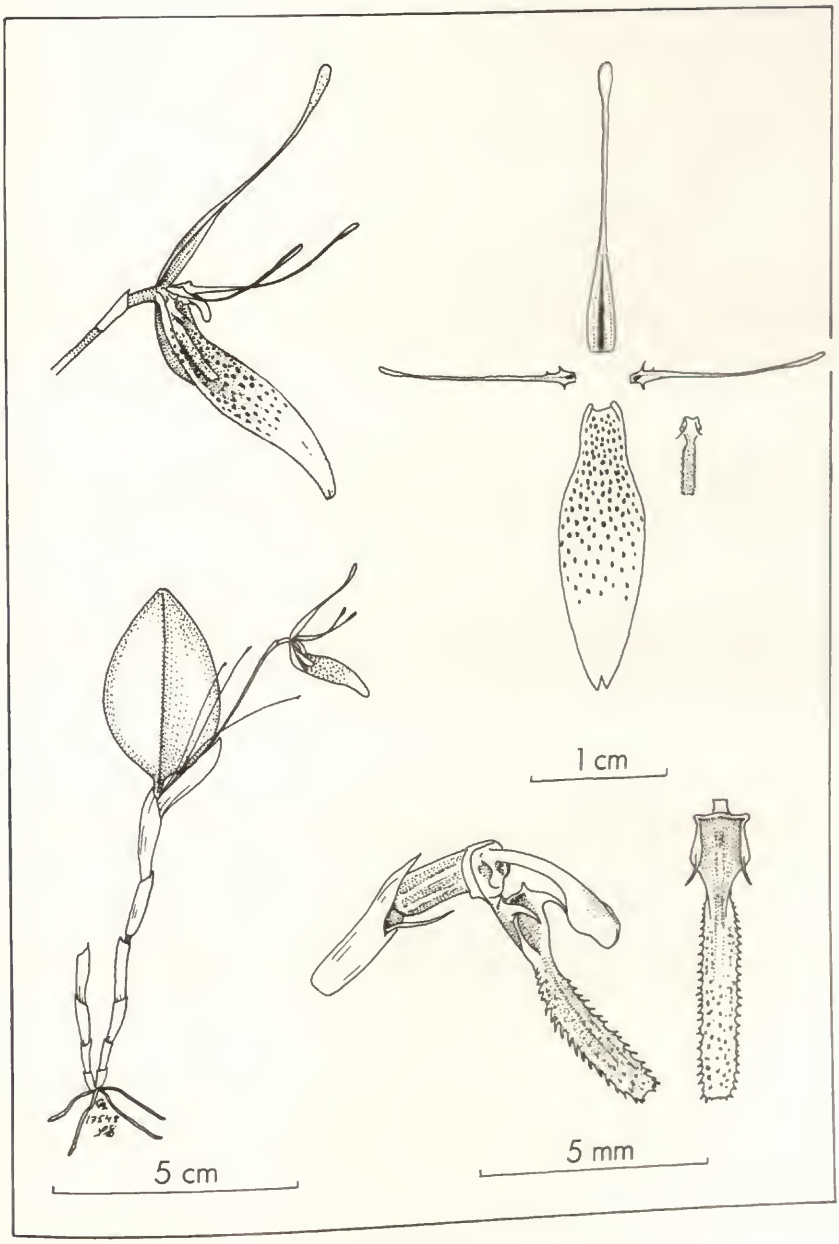
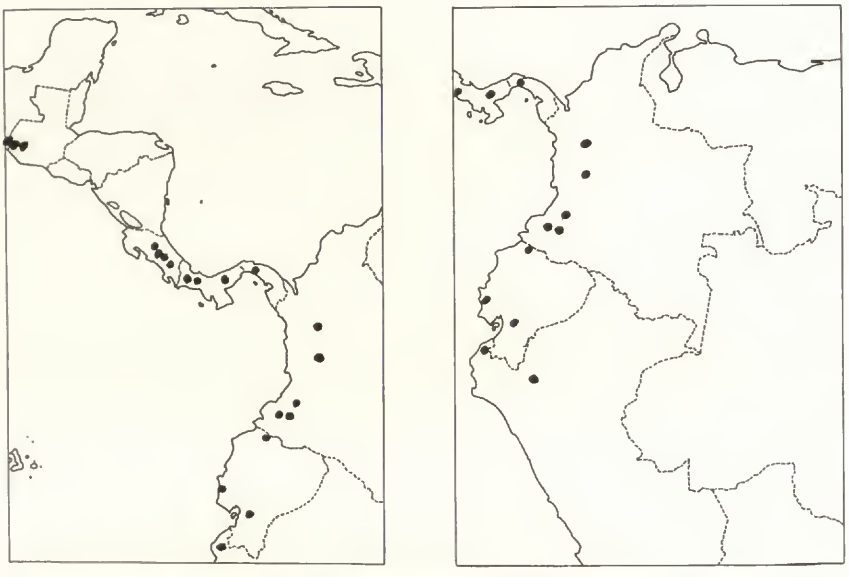


Plate 58. *Restrepia trichoglossa* Lehm. ex Sander
(Colombia)



ECUADOR: Prov. of Carchi: road to rock quarry between Tulcán and Andrade, alt. 3280 m, 22 Oct. 1983, *C. Luer & R. Escobar 8191* (SEL). Prov. of El Oro: above Cisne, Oct. 1876, *E. André 4335* (K); Cordillera de Amboca, Río Amboca above Zaruma, alt. 1300-1600 m, Oct. 1876, *F. C. Lehmann 6884* (AMES, K, US); above Zaruma, alt. 1500 m, 1 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12570* (MO). Prov. of Manabí: Cerro Montecristi, alt. 300-600 m, 1 Apr. 1961, *C. H. Dodson 366* (MO, SEL); same area, 27 Feb. 1977, *C. Luer, J. Luer & K. Cordoba 1476* (SEL).

PERU: Dept. of Amazonas: without specific locality, collected by P. Cloes, flowered in cultivation in Hasselt, Belgium, 15 Aug. 1993, *C. Luer 16970* (MO). Dept. of Tumbes: Zarumilla, El Caucho, *J. Schunke V. ex Bennett 3158* (AMES, UC). Without locality, obtained from Akem Orchids. flowered in cultivation in Enfield, England, by *J. Hermans 1807* (MO).

PANAMA: Prov. of Chiriquí: Cerro Horqueta, alt. 5500 ft., Oct. 1923, *C. W. Powell 344* (AMES, type of *R. filamentosa*, isotype: MO); Río Chiriquí Viejo, alt. 1800-2000 m, 6 Jan. 1939, *P. H. Allen 1384* (AMES, MO, NY); Boquete, Bajo Chorro, alt. 6000 ft., 13 Jan. 1938, *M. E. Davidson 116* (MO); same locality, 8 Feb. 1938, *M. E. Davidson 261* (AMES); same area, alt. 1400 m, *C. Luer, J. Luer, R. Dressler & K. Dressler 10529* (MO); Cerro Hornito, alt. 1750 m, 21 Dec. 1977, *J. P. Folsom, R. L. Dressler & R. B. Channell 7276* (MO, NY); Bajo Grande above Cerro Punta, alt. 2200 m, 9 Sept. 1976, *C. Luer & H. Butcher 1251* (SEL); Cerro Punta, 30 May 1970, *T. Croat 10542* (MO); above Camp Escopeta, Cerro Colorado, alt. 1700 m, 16 Feb. 1977, *C. Luer, J. Luer & R. L. Dressler 1440* (MO, SEL); Cerro Colorado, alt. 1400-1700 m 24 Oct. 1977, *J. Folsum 6123* (AMES, MO). Prov. of Panamá: Cerro Jefe, alt. 3100 ft., 5 Jan. 1972, *F. Dwyer & A. Gentry 9474* (MO).

COSTA RICA: Prov. of Alajuela: around San Ramón, 1921, *G. Acosta s.n.* (type of *R. subserrata* destroyed at B, no isotypes known); around San Ramón, 1921, *G. Acosta s.n.* (type of *R. angustilabia* destroyed at B); cultivated at Lankester Gardens, *C. Luer 16861* (Neotypes of *R. angustilabia* and *R. subserrata* here designated: MO); Candelaria, alt. 8000 ft., *Oersted 7201* (C, W); Viento Fresco, alt. 1600-1900 m, 13 Feb. 1926, *P. C. Standley & R. Torres 48014* (AMES); Bajos del Torro, collected by O. Rodriguez, flowered in cultivation at Lankester Gardens, 7 Mar. 1995, *C. Luer 17384* (MO). Prov. of Cartago: San Cristóbal, 1869, "Restrepia centereana," *A. Endres 375* (W); *A. Endres Restrepia No. 4* (W). Prov. of Puntarenas: Monteverde, 8 Feb. 1960, *C. W. Palmer 205* (NY); Monteverde, alt. 1600 m, 7 Feb. 1968, *C. H. Dodson 3501* (SEL); Monteverde, alt. 1500 m, 24 Dec. 1985, *W. A. Haber 3891, 3892* (MO, NY); Monteverde, Finca Eduardo Arguedas, alt. 1450 m, 11 Feb. 1987, *W. A. Haber & E. Bello 6678, 6679* (CR, MO); Monteverde, road to TV towers, alt. ca. 1700 m, 9 Mar. 1989, *J. T. Atwood 89-42* (SEL); Monteverde, alt. 1500 m, 3 Feb. 1992, *S. Ingram & K. Farrell 1250* (MO, SEL); Ojo de Agua, alt. 1515 m, *W. Haber & E. Bello 7741* (CR, MO); Cordillera de Tilarán north of Monteverde, 26 Dec. 1985, *P. M. Catling & V. Brownell C9.3* (AMES, DAO). Prov. of Heredia: Río Porroi above San José de la Montaña, alt. 1700 m, 4 June 1968, *C. K. Horich s.n.* (AMES, MO); Barva, NW of Porrosatí, alt. 2000 m, 5 Oct. 1990, *S. Ingram & K. Farrell 583* (CR, K, SEL). Prov. of San José: near El General, alt. 1370 m, Dec. 1936, *A. F. Skutch 2960* (AMES); Cerro Cedral, alt. 1800-2400 m, collected by Cl. Horich, flowered in cultivation, 10 Aug. 1954, *P. Hutchison s.n.* (MO); east of San José, 28 Oct. 1960, *C. W. Palmer s.n.* (NY); Cerro Cedral, alt. 1800-2400 m, 14 Jan. 1960, *C. K. Horich s.n.* (AMES). Without locality, ca. 1867, *A. Endres 230* (W).

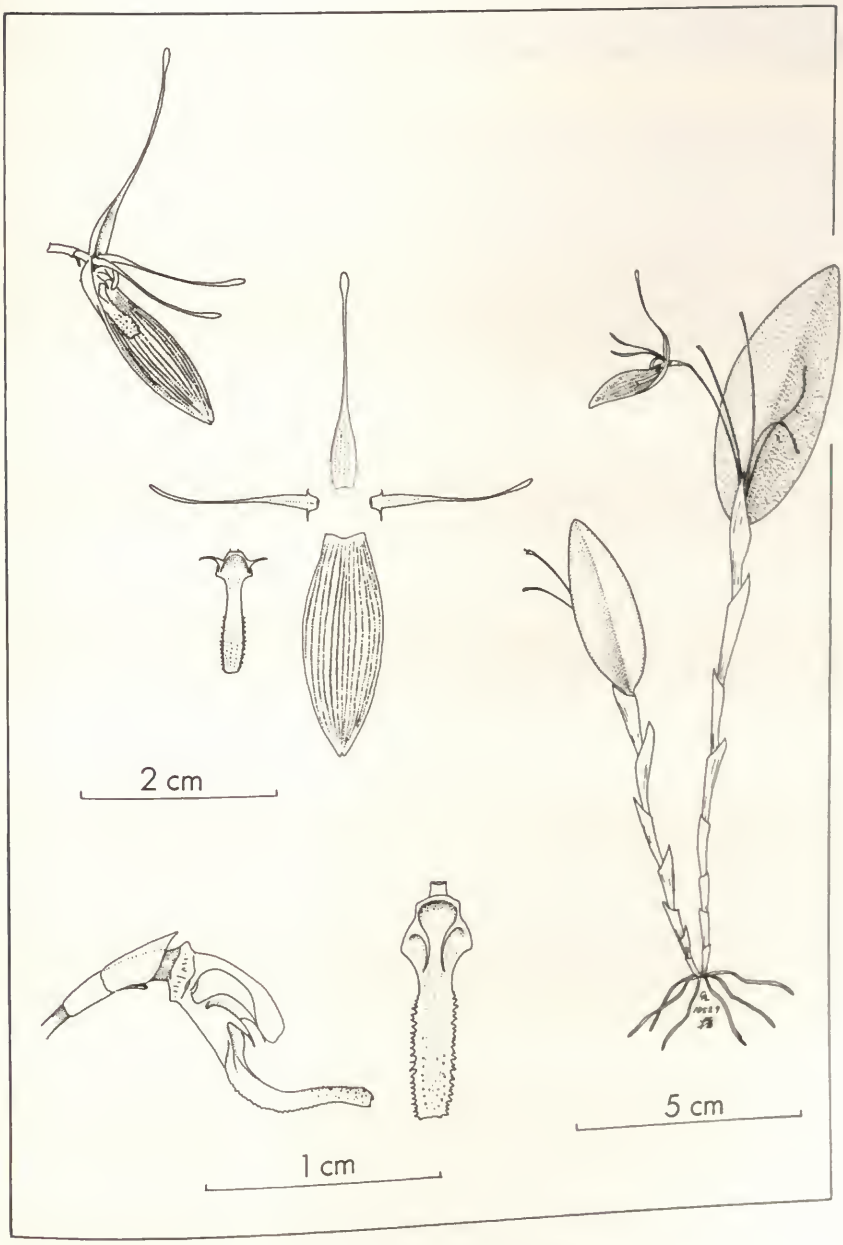


Plate 59. *Restrepia trichoglossa* Lehm. ex Sander
(Panama)

GUATEMALA: Without locality, 16 Jan. 1857, *Wendland 218* (W); Dept. San Marcos: Volcán Tajumulco, Río Cabús above Cueva da la Palomas, alt. 1300-1500 m, 16 May 1940, *J. A. Steyermark 37983* (AMES, MO). Dept. Quetzaltenango: between Pirineos and Patzulín, 1200-1400 m, 4 Feb. 1941, *P. C. Standley 87029* (AMES).
MEXICO: Edo. Chiapas: Motozintla, near Buenos Aires, alt. 2000 m, 31 Mar. 1989, *I. Alcocer & R. Jiménez 3408* (AMO); Jaltenango, Reserva El Triunfo, alt. 1400 m, 21 Feb. 1990, *M. Heat & A. Long 709* (AMO).

The name *Restrepia trichoglossa* was first published in Sander's *Orchid Guide*, actually a sales catalogue of prices, in 1901. No doubt, plants collected and identified by Lehmann under that name found their way into the trade at that time. The meagre description in English could apply to several small species with spotted synsepals, but the epithet *trichoglossa* is present on a specimen at K collected by Lehmann near Zaruma in southwestern Ecuador. His watercolor painting *164* of his collection *6884* is also at K. *Restrepia trichoglossa* was first collected in this area by Eduard André in 1876, and it is still to be found there today.

In 1920, Schlechter described simultaneously two collections by Madero from somewhere in the old department of Cauca, Colombia, as *R. leontoglossa* and *R. serrilabia*. They are extremely similar with very narrow, fringed lips, the difference being the striped synsepal of *R. leontoglossa* and the spotted synsepal of *serrilabia*, no doubt the same as *R. trichoglossa*. The holotypes of both *R. leontoglossa* and *R. serrilabia* were lost in the destruction of the Berlin herbarium at Dahlem, and no isotypes are known. Neotypes are designated above.

In 1923, from near San Ramón in central Costa Rica, Schlechter described simultaneously two collections by Acosta. They appear to represent the same species. *Restrepia subserrata*, published on the page following *R. angustilabia*, became known as the frequent Central American species with a yellow, thinly striped synsepal. The Central American *R. subserrata* with a striped synsepal is indistinguishable from the Andean *R. leontoglossa*, and both concepts grade into the spotted *R. trichoglossa*. The holotypes of both *R. subserrata* and *R. angustilabia* were also lost in the destruction of the Berlin herbarium, and no isotypes are known. Neotypes are designated above.

As presently conceived, *R. trichoglossa* is a frequent, widely distributed species-complex that occurs from Chiapas, Mexico, through Central America into the Andes of Colombia, Ecuador and Peru. Vegetatively, the small to medium-sized habit is not remarkable. Slender peduncles bear the flowers near or beyond the tip of the leaf. The flowers are small to medium-sized with a white, pink or yellow synsepal that is finely dotted or striped in red or purple. Fine lines often break up into dots below the middle, and sometimes they disappear or break up into dots toward the apex. The lip is slender with the epichile narrowly oblong, less than two millimeters wide, and minutely verrucose and with serrate margins.

Both striped and spotted color-forms occur in all areas, but either one of the patterns is dominant in certain areas. In most areas of Central America (Color 15, LL) and coastal Ecuador (Color 15, UR) the synsepal is yellow with thin brown stripes. In many areas of southern Colombia and southern Ecuador the synsepal is pinkish and dotted (Color 15, UL). In some areas, such as in Costa Rica, spots and stripes are commonly mixed (Color 15, LR).

The yellow, thinly striped synsepal of *R. trichoglossa* is similar to that of Andean *R. brachypus*, but the latter is larger vegetatively and florally with a broader lip. Although rarely, the stripes of *R. brachypus* (syn.: *R. striata*) also break up into spots (Color, UL, UR). Striped forms of *R. trichoglossa* are also similar to Venezuelan *R. wageneri* which is distinguished by an oblong, non-fringed lip.

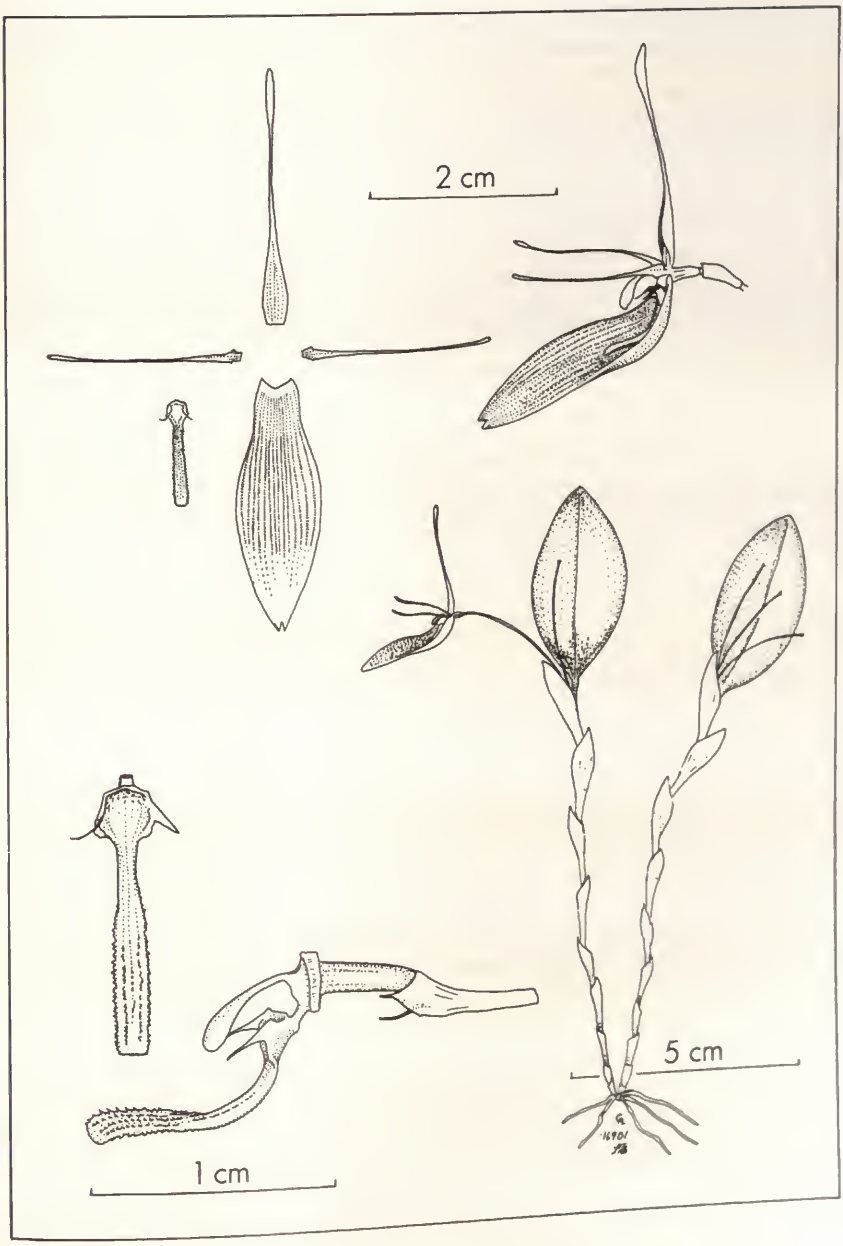


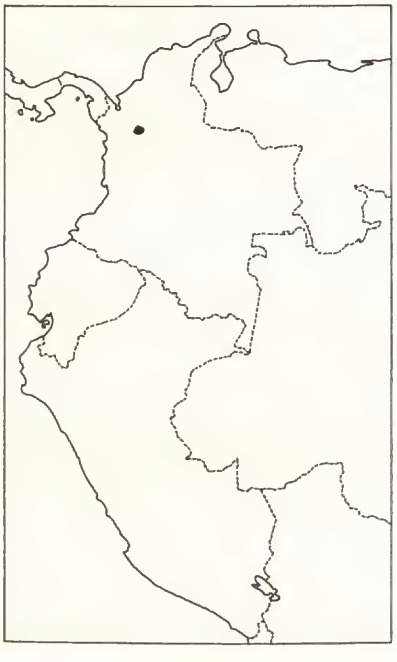
Plate 60. *Restrepia trichoglossa* Lehm. ex Sander
(Costa Rica)

Restrepia tsubotae Luer & Escobar, Orquideología 20: 178, 1996.

Ety.: Named in honor of Shigenobu Tsubota of Pereira, Colombia, in whose orchid nursery Escobar first discovered this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 5-9 cm long, enclosed by 6-8 thin, whitish, loose, oblique, compressed, imbricating sheaths, with the lower sheaths darkly spotted with black. **Leaf** erect, coriaceous, more or less suffused with purple beneath, elliptical-ovate, subacute, 3.5-4 cm long, 2-2.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole 2-3 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back surface of the leaf; peduncle slender, 3.5-4 cm long; floral bract thin, tubular, 5 mm long; pedicel stout, 2-3 mm long, with a short, adjacent filament; ovary lightly sulcate, 2-3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, 5-veined with the midvein dark brown, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 22-24 mm long, 2 mm wide above the base, the lateral sepals brown toward the base, becoming orange toward the apex, diffusely dotted with dark brown, connate to near the apex into a shallowly concave, elliptical lamina, 22-25 mm long, 7-8 mm wide expanded, the apex obtuse, minutely bifid; **petals** membranous, translucent white with a purple spot above the base, narrowly linear-triangular, the margins with 1 or 2 minute processes near the base, attenuated above the middle with the apex slightly clavate-thickened, 17 mm long, 0.9 mm wide; **lip** orange, dotted with dark purple-brown, narrowly oblong-subpandurate, 7.5 mm long, the epichile oblong, verrucose-spiculate with fimbriate margins, the truncate, 1.6 mm wide, the isthmus 0.75 mm wide, the hypochile subquadrate, concave with thin, erect margins, 1.5 mm wide, each side with a triangular-uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a slender, cylindrical neck; **column** white, slender, clavate, 4 mm long, the base pedestal-like.

COLOMBIA: Dept. of Antioquia: Briceño, (**COLOR 16, UR**), alt. 600 m, collected by M. Zapata, 4 Dec. 1991, flowered cultivation at Colomborquídeas, 6 July 1996, *C. Luer 17976* (Holotype: JAUM; Isotype: MO); without locality, flowered in cultivation at Ran Orchids, Pereira, by S. Tsubota, *R. Escobar s.n.* (JAUM, MO).



This species was first discovered by Rodrigo Escobar who found it cultivated without collection data at Ran Orchids, Pereira, by Shigenobu Tsubota. Another collection was subsequently discovered in flower at Colomborquídeas where it had been cultivated unnoticed since 1991. The latter had been collected with *Masdevallia mejiana* Garay in lowlands of Antioquia.

Restrepia tsubotae is related to the *R. trichoglossa*-complex. It differs from the latter by much larger flowers with synsepals diffusely spotted with dark brown on orange that becomes brown toward the base. The epichile of the lip is fimbriate, long and narrow, about one and a half millimeters wide. The isthmus between the hypochile and epichile is only 0.75 millimeter wide.

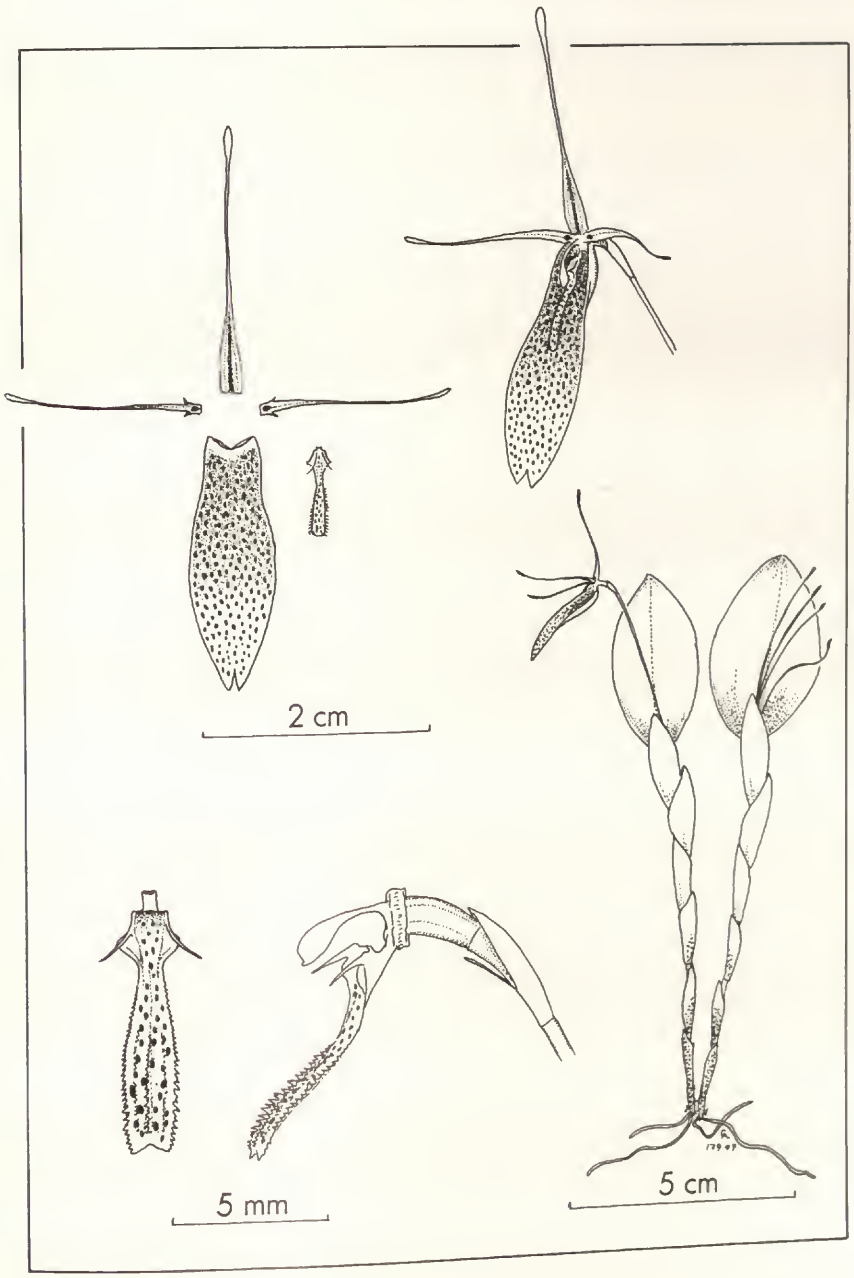


Plate 61. *Restrepia tsubotae* Luer & Escobar

Restrepia vasquezii Luer, Orquideología 20: 180, 1996.

Ety.: Named in honor of Roberto Vásquez Chavez of Santa Cruz, Bolivia, discoverer of this species.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 8-12 cm long, enclosed by 4-6 thin, whitish, loose, compressed, more or less imbricating, distichous sheaths, the lower sheaths dotted with black. **Leaf** erect, coriaceous, ovate, obtuse, 5-7 cm long, 3.5-4.5 cm wide, the base broadly rounded, contracted into a twisted petiole 5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle along the back side of the leaf; peduncle slender, 4-6 cm long; floral bract thin, tubular, 4 mm long; pedicel stout, 4 mm long, with a filament 3 mm long; ovary purple, lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white, 5-veined with the midvein red-purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 23 mm long, 2.5 mm wide above the base, the lateral sepals connate to near the apex into a lightly concave, elliptical lamina, yellow, diffusely spotted with purple, 23 mm long, 10 mm wide, the apex obtuse, shortly bifid; **petals** membranous, translucent white with a purple midvein and margins, narrowly linear-ovate, the margins irregularly and minutely toothed near the base, attenuated above the middle with the apex slightly clavate-thickened, 17 mm long, 1 mm wide; **lip** yellow, diffusely spotted with purple, oblong, 10 mm long, 3 mm wide, very slightly constricted near the middle, the epichile minutely verrucose with minutely serrate margins, the apex truncate, subretuse, the hypochile subquadrate, concave with thin, erect margins, each side with an acute, uncinate process, the disc with a pair of low carinae extending forward from the bases of each process onto the epichile, the base truncate, connected to the column-foot by a thick, cylindrical neck; **column** white, slender, clavate, 5 mm long, the base pedestal-like with a pair of obtuse, yellow calli.

BOLIVIA: Dept. of La Paz: Nor Yungas, (**COLOR 16, LL**), epiphytic in cloud forest between Chuspipata and Yolosa, alt. 1800 m, 27 Aug. 1991, *C. Luer, J. Luer, R. Vásquez et al. 15370* (Holotype: MO); west of Coroico, alt. 1820 m, 27 Jan. 1983, *C. Luer, J. Luer & R. Vásquez 8574* (SEL); between Chuspipata and Yolosa, alt. 2100 m, 3 Apr. 1984, *J. C. Solomon & M. Uehling 12185* (MO, SEL); same area, alt. 1900 m, 28 May 1988, *J. C. Solomon 18471* (MO).

This species is apparently uncommon in the Nor Yungas of Bolivia where it is known from only one area of forest. It is allied to both *R. contorta* and *R. guttulata*, but distinguished from them by a combination of characters frequent in the genus.

Vegetatively and florally *R. vasquezii* is average in size for the genus. The small size of the floral parts distinguishes it from *R. guttulata*. The synsepal is about 23 millimeters long, and diffusely spotted with purple. The ten millimeter-long, oblong lip is slightly constricted just below the middle, and the surface and margins are minutely subscabrous-denticulate. The lip of *R. contorta* is subpandurate with a conspicuously denticulate epichile.

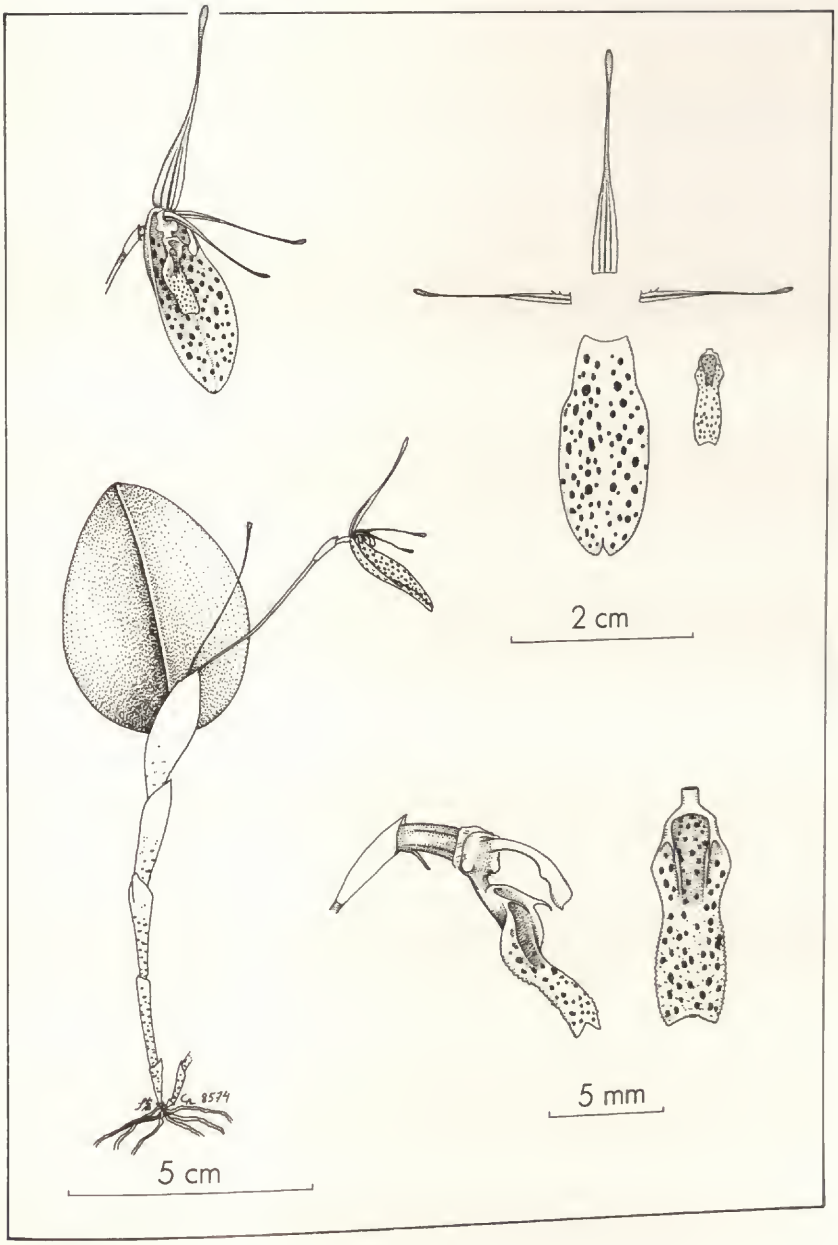


Plate 62. *Restrepia vasquezii* Luer

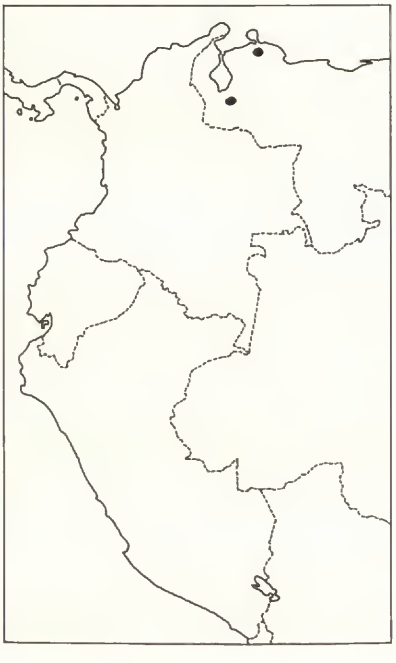
Restrepia wageneri Rchb.f., Bonplandia 2: 23, 1854.

Ety.: Named in honor of Hermann Wagener, nineteenth century German traveler and collector, who collected and illustrated this species.

Syn.: *Restrepia lansbergii* var. *wageneri* Eaton, Mem. Amer. Acad. Arts 8: 220, 1860.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 4-6.5 cm long, enclosed by 5-6 thin, whitish, loose, compressed, more or less imbricating sheaths, the lowermost dotted with black. **Leaf** erect, coriaceous, elliptical-ovate, acute, 3.5-4.5 cm long, 1.8-2.3 cm wide, the base broadly cuneate or rounded, contracted into the petiole 4-5 mm long. **Inflorescence** a solitary flower, produced successively in a fascicle behind the leaf; peduncle slender, 4-5 cm long; floral bract thin, tubular, 4-5 mm long; pedicel 3 mm long, with a minute filament; ovary purplish, lightly sulcate, 3 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent white with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 15 mm long, 2 mm wide, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, obovate lamina, pale yellowish, lightly veined in red-brown below the middle, 15 mm long, 5.5 mm wide expanded, multiple-veined, the apex shortly bifid with the tips acute; **petals** membranous, translucent white, with a purple midvein, narrowly linear-triangular, with the margins entire, attenuated above the middle with the apex slightly clavate-thickened, 9.5 mm long, 0.5 mm wide above the base; **lip** yellowish, lightly marked with purple, oblong, 5 mm long, 1.25 mm wide, the epichile oblong, truncate, microscopically scabrous with microscopically denticulate margins, the hypochile subquadrate, concave with thin, erect margins, each side with a capillary, uncinate process, the disc with a pair of low carinae extending forward from the base of each process onto the epichile, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** yellowish white, slender, clavate, 3 mm long, with a purple spot at the base, the base pedestal-like with a pair of obtuse, yellow calli.

VENEZUELA: Edo. Mérida: near Mérida, alt. 7,000 ft., Jan. 1851, *H. Wagener 15* (Holotype: W). Edo. Falcón: Sierra de San Luis, near Curimagua, alt. 1200 m, Sept. 1967, *G. C. K. Dunsterville & J. A. Steyermark 1017*; same collection, flowered in cultivation at El Hatillo, 28 July 1982, *C. Luer 8107* (SEL); Sierra de San Luis, *G. Carnevali 3278* (MO); same area, *G. Bergold 12* (MO). Without collection data, **(COLOR 16, LR)** flowered in cultivation at Middleburg, FL, 15 June 1995, by *G. Schudel s.n.* (MO).



This species was first found and illustrated by Wagener in 1851 near Mérida in western Venezuela. His watercolor painting present in the Reichenbach herbarium at W shows the flower to be yellow with red-brown stripes, the stripes questionably confirmed by an examination of the dry flower of the type-specimen. No mention of either stripes or spots was made in the description. The sepals are fifteen millimeters long, and the lip is oblong with only microscopically irregular margins. The illustration is designated the lectotype.

In spite of the available herbarium specimen and watercolor painting, the description and illustration published by Reichenbach later in *Xenia Orchidaceae* 1, pl. 60, fig. 3 differ significantly from the original description and illustration. This later illustration shows a spotted flower, but this cannot be regarded as an illustration of the type. Apparently not realizing differences, the new description and line

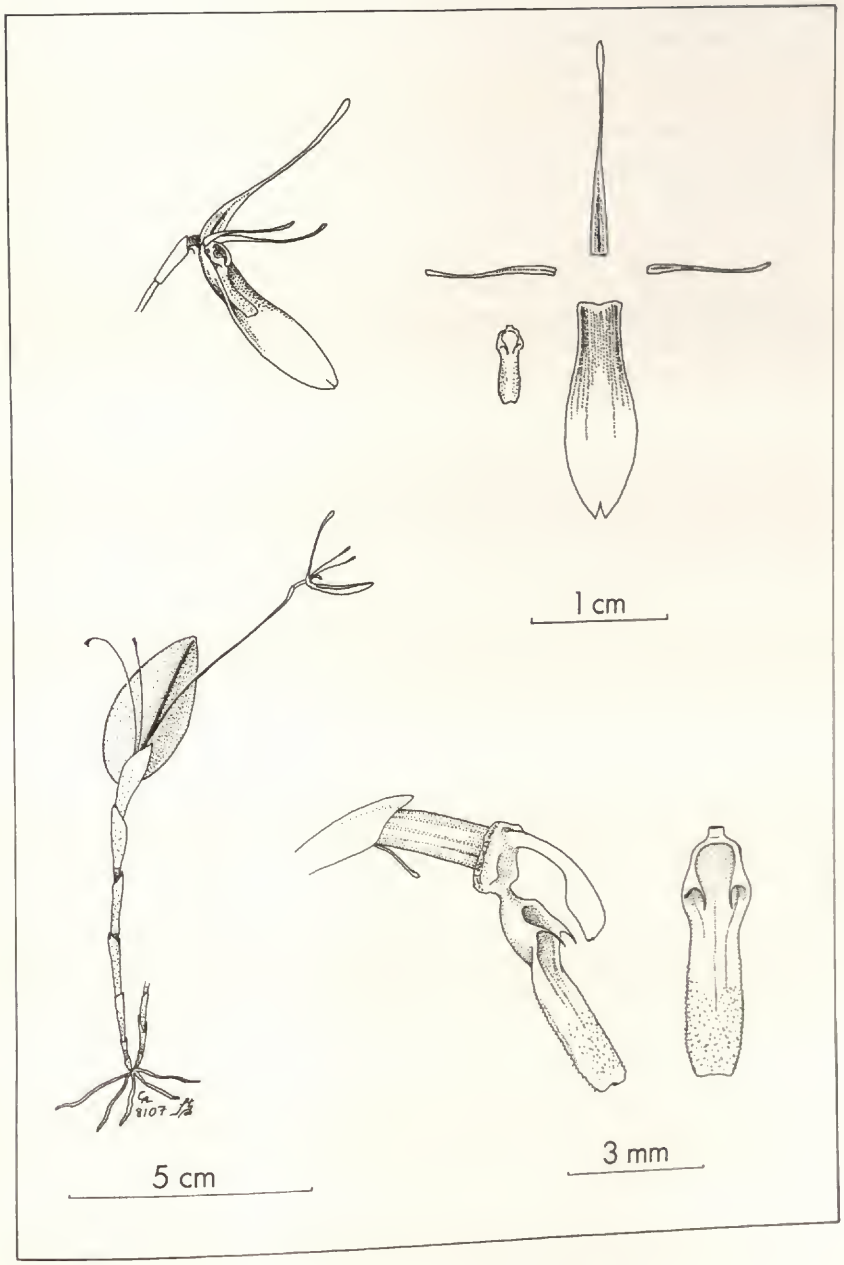


Plate 63. *Restrepia wageneri* Rchb.f.

drawing of a proportionately larger, diffusely spotted flower (presumably *R. elegans*) was used to illustrate *R. wageneri*. Quoting Wagener Reichenbach writes in *Xenia Orchideacea* that *R. wageneri* was rare, that 100 plants of *R. elegans* could be found for every one of *R. wageneri*.

Restrepia wageneri is apparently more frequent in the coastal range of Venezuela than in the nearby mountains of Mérida. An illustration by Dunsterville (*Dunsterville 1017*) was erroneously identified in *Venezuelan Orchids Illustrated* as *R. nittiorhyncha*, a distinctive Colombian species not known from Venezuela. The accompanying illustration was made from a fresh flower from the living plant of *Dunsterville 1017* cultivated by Dunsterville at his home in El Hatillo. The synsepal of Dunsterville's drawing is much too heavily shaded.

Restrepia wageneri is allied to both *R. elegans* and *R. lansbergii*, but from them it is distinguished by the thinly striped synsepal. Intermediate forms occur in the coastal range between *R. lansbergii* and *R. wageneri* as illustrated by Dunsterville (1969). The flower of *R. wageneri* is similar to a striped form of *R. trichoglossa*, but the very narrow, usually fringed lip immediately distinguishes the latter. The small lip of *R. wageneri* is oblong, only faintly, if at all, narrowed near the middle. The surface and margins are only minutely or microscopically scabrous-serrulate.

The illustration (*Dunsterville 763*) identified as *R. wageneri* in *Venezuelan Orchids Illustrated* appears to be a form of *R. trichoglossa*. According to Dunsterville's notes accompanying his drawing, the illustration was made from a cultivated plant that was probably imported from outside Venezuela.

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GLOSSARY OF ABBREVIATIONS, NAMES AND TERMS AS USED IN SYSTEMATICS OF RESTREPIA

acuminate, the margins of the leaf or floral part concave toward the apex, tapering into a point.

acute, applied to the tip of the leaf or floral part, the sides meeting at an angle less than 90°.

alt., altitude, the number of meters above sea level.

Amer. Orchid Soc. Bull., Bulletin of the American Orchid Society.

AMES, the Orchid Herbarium of Oakes Ames, Cambridge, MA, USA.

AMO, Herbario, Asociación Mexicana de Orquideología, Mexico City, Mexico.

anther, the apical part of the column that produces the pollinia.

anther cap, the operuculate covering of the pollinia.

apiculate, the apex with an apiculum, an abrupt point.

attenuate, long-acuminate.

basionym, a name in a different genus or other combination upon which a later name or combination is based.

BR, Jardin botanique national de Belgique, Meise, Belgium.

bract, a sheathlike structure on the peduncle. Technically, any sheathlike structure that is not a foliage leaf.

caespitose, with abbreviated rhizomes, the ramicauls approximate or produced in clumps or tufts.

callus, a thickening, a protuberance, or one or more keels on the disc of the lip.

capillary, extremely slender, hairlike.

carina, a low lamella or keel, an elongated thickening or callus.

carinate, with a carina or carinae.

cellular-glandular, with prominent glandular or capitate cells, with a cobble-stone appearance.

ciliate, with hairs (cilia) on the margin.

clavate, thickened toward the apex, club-shaped.

cleistogamous, a flower self-fertilized without opening.

column, the central structure of the flower composed of the united style and the filaments of the anther.

column-foot, the extension of the base of the column to which the lip is attached.

conduplicate, of the leaves, with a single, midline fold.

connate, inseparable, or united.

coriaceous, of leathery texture.

cultivar, a cultivated variation.

CR, Herbario Nacional, San José, Costa Rica.

dentate, denticulate, toothed.

Dept., department, a political division of a country.

disc, or **disk**, the upper surface of the central portion of the lip.

dorsal, on the upperside.

Edo., estado, a political division of a country.

elliptical, shaped like an ellipse, widest at the middle.

entire, with smooth or unlobed margins.

epichile, the terminal segment of the lip.

epiphytic, growing upon another plant, but not parasitic.

filament, a slender process from near the adaxial end of the pedicel. It is a vestigial remnant of the next, aborted flower, seen on the pedicel of single-flowered species or on the pedicel of the terminal flower of a racemose species. The term is not to be confused with the anther-bearing filament of a stamen.

filamentous, filiform, slender as a hair or thread.

floral bract, the bract subtending a pedicel.

form, a variation; a taxonomic category below the rank of variety.

G, Conservatoire et Jardin botaniques de la Ville Genève, Switzerland.

Gard. Chron., the Gardeners' Chronicle.

gen., genus, genera (pl.), the taxonomic category including species; the first part of a binomial name.

glabrous, smooth, without hairs.

Hda., hacienda.

holotype, the specimen or illustration upon which the taxon is based.

HPUJ, Herbario Pontificia Universidad Javeriana, Bogotá, Colombia.

hypochile, the basal portion of the lip.

inflorescence, the single flower in *Restrepia*.

Isotype, any duplicate of the holotype, that is, any specimen that is part of the same collection as the holotype.

isolectotype, any duplicate of a lectotype.

isthmus, the central narrowing of the lip.

JAUM, the herbarium of "Joaquín Antonio Uribe," Medellín, Colombia.

K, the herbarium of the Royal Botanic Gardens at Kew, England.

"keiki," a plantlet produced from the apex of a ramicaul.

Kränzl., Fritz Kränzlin, German taxonomist.

lamella, a tall carina or keel, a plate-like thickening or callus (a callus may include lamellae).

lamina, the blade of a leaf, sepal(s), or surfaces of the petals.

lectotype, a specimen or illustration selected from original material, or from two or more specimens cited as types by the author, when no holotype was indicated.

Lehm., Friedrich Carl Lehmann, German engineer and Consul in Popayán, Colombia, who made extensive botanical collections.

lip, the modified third petal.

m, meter, meters, the metric unit of length (100 centimeters) equal to 39.37 inches, 3.28 feet, or about 1.1 yards.

MO, the herbarium of the Missouri Botanical Garden.

nerve, vein, the longitudinal line or lines (often branched) within the floral parts, representing vascular bundles.

neotype, a specimen or illustration selected to serve as the nomenclatural type when all material of the holotype is missing.
NY, the herbarium of the New York Botanical Garden.
obovate, egg-shaped in outline, widest between the middle and the apex.
obtuse, applied to the tip of the leaf or floral part, the sides meeting at an angle more than 90°.
osmophore, a scent producing structure.
ovary, the part of the flower that develops into the fruit.
ovate, egg-shaped in outline, widest between the base and the middle.
pandurate, violin-shaped, narrowest near the middle.
papillose, covered with papillae or nipple-like humps.
pedicel, the stem of an individual flower.
peduncle, the stem that bears the solitary flower.
petals, the two floral parts borne within the sepals, narrowly attenuate in *Restrepia*.
petiole, the stemlike basal portion of the leaf.
pollinium, pollinia (pl.), compact pollen masses produced in the anther (two pairs in *Restrepia*).
pollinarium, all pollinia with viscidium contained within the anther.
pubescent, more or less covered with hairs.
quebrada, a stream.
ramicaul, the "secondary stem," the aerial, leaf-bearing stem, applied only to pleurothallids.
Rchb. f., Heinrich Gustav Reichenbach, *filius*, German taxonomist.
resupinate, the flower bearing the lip lowermost.
retuse, with a shallow notch at the apex.
rhizome, in *Restrepia*, the horizontal stem made up from the base of successive ramicauls.
rostellum, in *Restrepia* represented as a minute flap between the anther and the stigma.
s.n., *sine numero*, without number.
Schltr. Friedrich Richard Rudolf Schlechter, German taxonomist.
sect., section, a division of a genus.
SEL, the herbarium of the Marie Selby Botanical Garden.
sepals, the three most prominent, outer floral parts.
sheaths, the thin, leaflike structures enveloping the lower portions of the ramicauls.
species, species (pl.), a population or a group of interbreeding or potentially interbreeding populations that share genetic features, and are separated by barriers from other populations; the basic unit in biological classification; the second part of a binomial name.
stem, a general term applied to the stem of a flower (pedicel), the stem of the inflorescence (peduncle), the stemlike base of the leaf (petiole), the "secondary stem" (ramicaul), or the rhizome.
stigma, the receptive part of the column on the undersurface.
subacute, acute, the angle of the apex only slightly less than 90°.
subsect., subsection, a division of a section.
sympatric, species that occur in the same area.
synonym, an alternate (usually superseded) name.
synsepal, the blade formed by the union of the lateral sepals.
taxon, taxa (pl.), a taxonomic group of any rank.
taxonomy, the science of identification and classification; systematics.
terete, cylindrical, round in cross-section.
trichome, a cellular hair.
truncate, as though cut off transversely at the apex.
type, a holotype, isotype, or lectotype.
UC, University Herbarium, University of California, Berkeley, CA.
US, the United States National Herbarium, Smithsonian Institution.
USM, Herbario, Universidad Nacional Mayor de San Marcos, Lima, Peru.
vein, nerve, the longitudinal line or lines (often branched) within the floral parts, representing vascular bundles.
verrucose, warty.
W, the herbarium of the Naturhistorisches Museum in Vienna (Wien).

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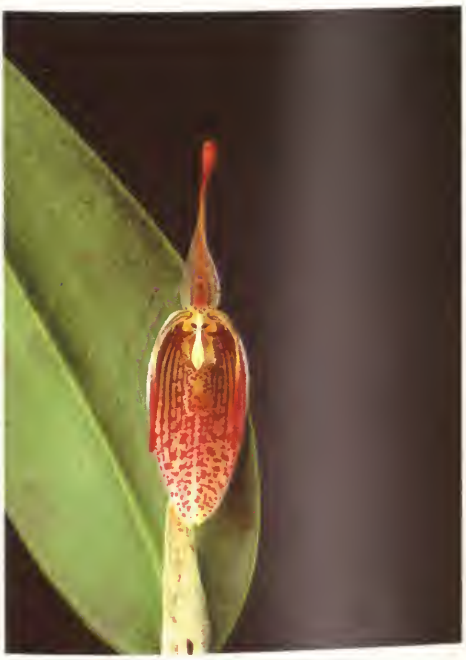
Restrepia antennifera



Restrepia aristulifera

Restrepia aspasicensis

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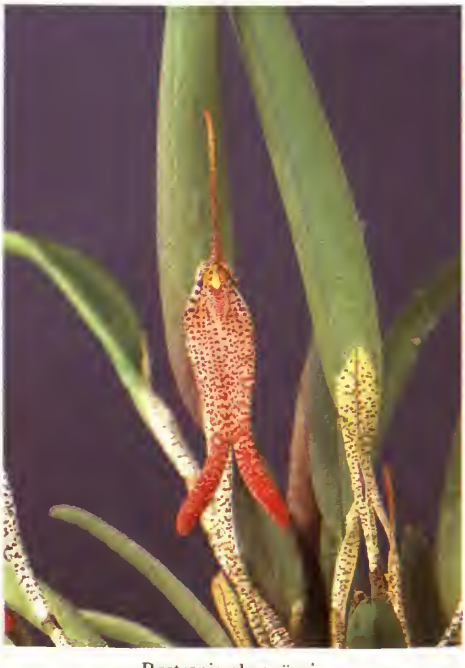
Restrepia brachypus

Restrepia brachypus

Restrepia brachypus



Restrepia chocoënsis

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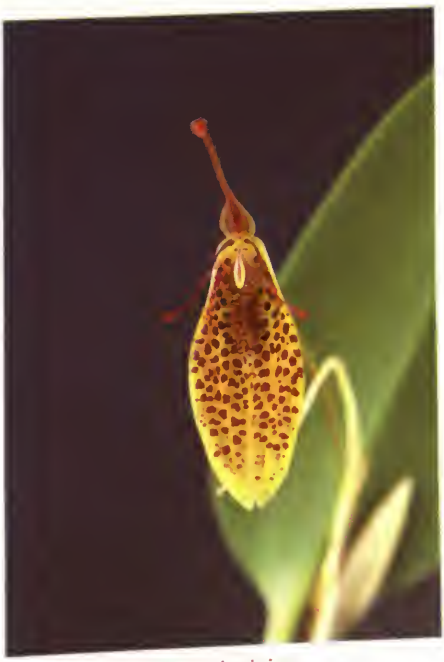
Restrepia chameleon

Restrepia chameleon

Restrepia chrysoglossa



Restrepia citrina

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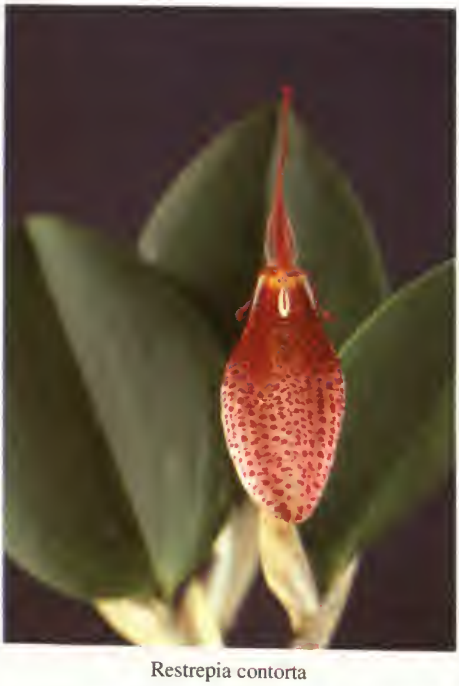
Restrepia contorta

Restrepia contorta



Restrepia contorta

Restrepia contorta

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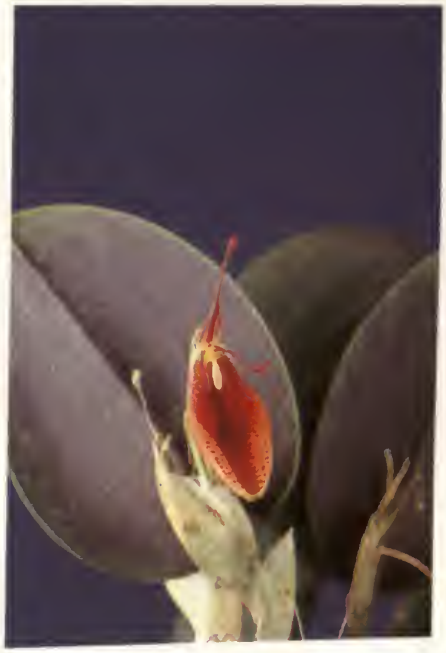

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Restrepia cuprea

Restrepia cuprea

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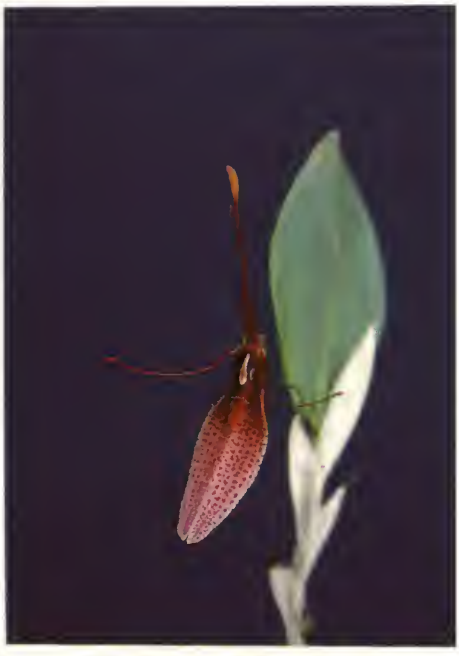
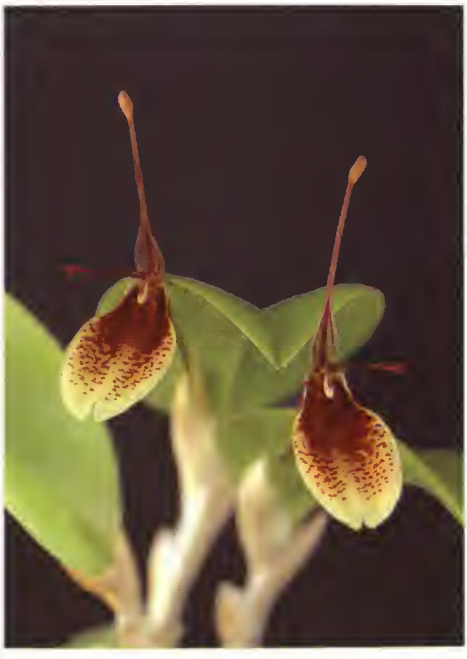


Restrepia dodsonii



Restrepia echinata

Restrepia echo

Restrepia elegans

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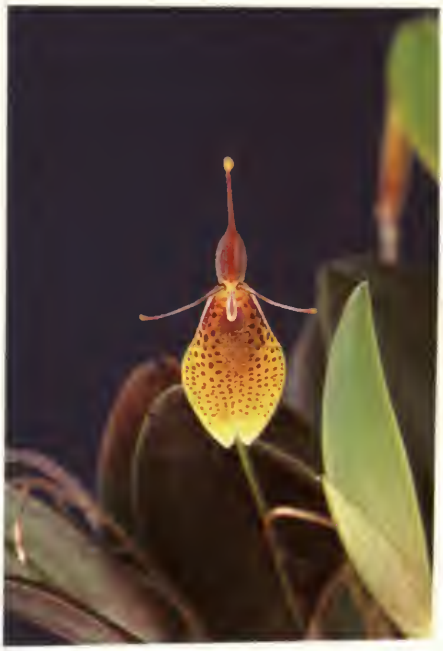

Restrepia escobariana

Restrepia flosculata

Restrepia flosculata

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Restrepia guttulata

Restrepia guttulata

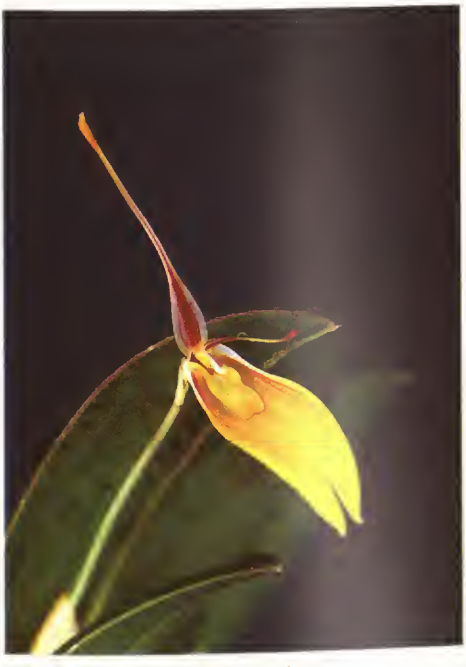
Restrepia guttulata

Restrepia guttulata

Color Plate 8.

Restrepia falkenbergii

Restrepia iris



Restrepia jesupiana

Restrepia lankesteri

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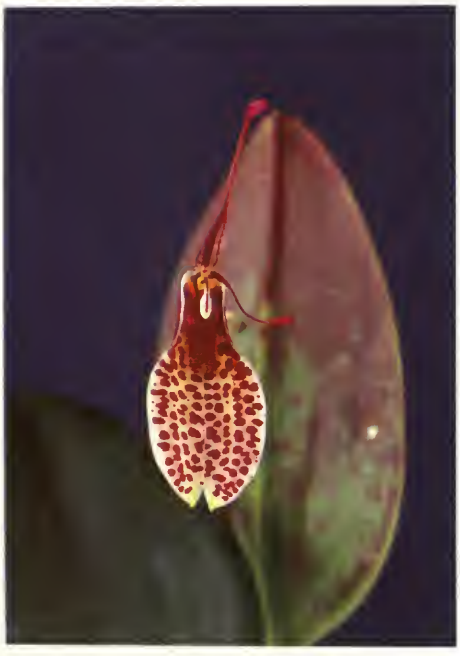

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Restrepia lansbergii

Restrepia limbata

Restrepia mendozae

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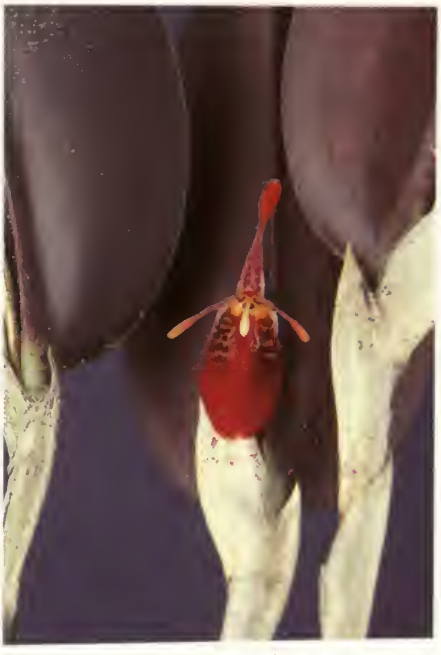

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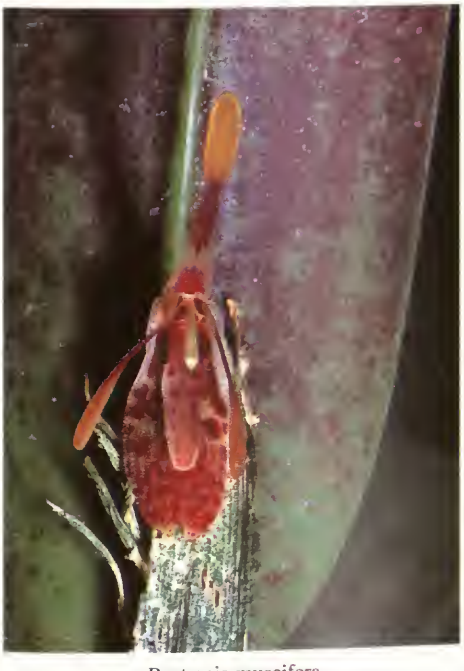

Restrepia muscifera

Restrepia muscifera

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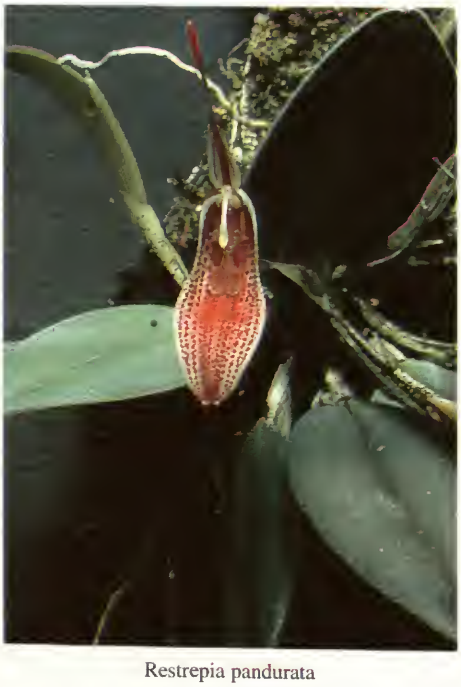
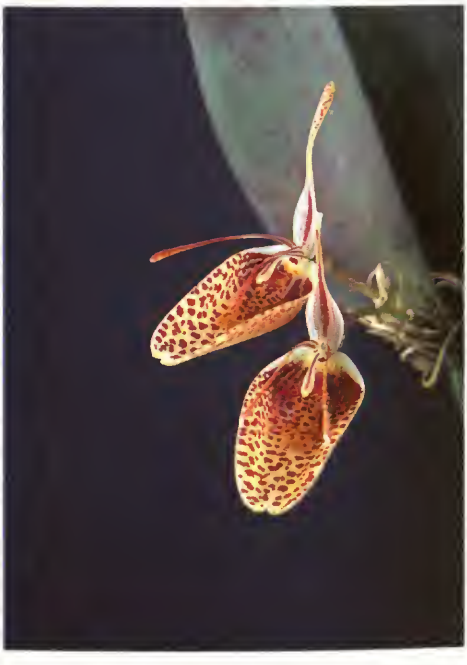
Restrepia nittiorhyncha



Restrepia pandurata



Restrepia pelyx

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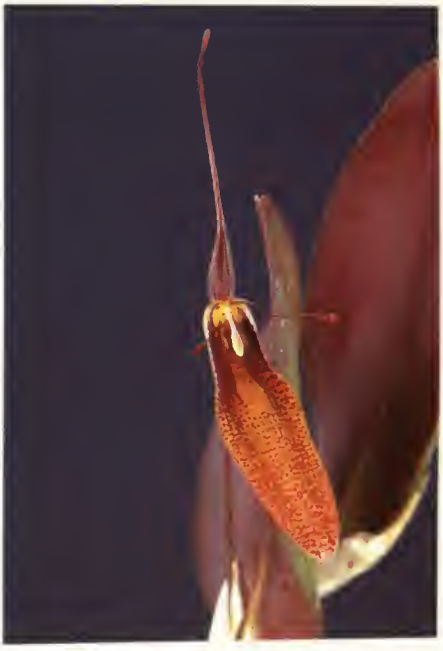
Restrepia purpurea



Restrepia radulifera

Restrepia roseola

Restrepia schizosepala

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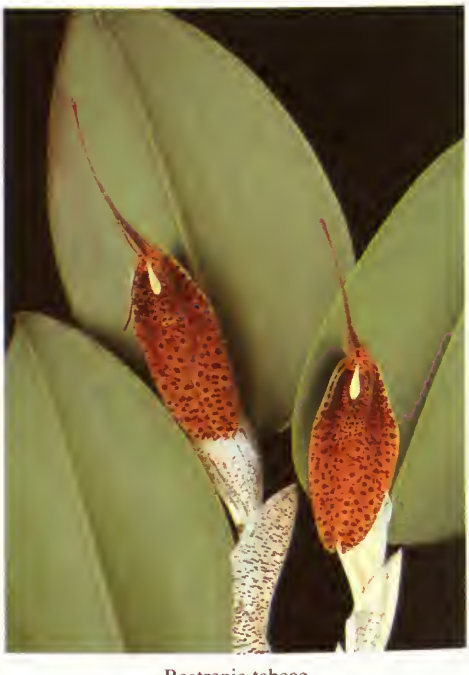
Restrepia sanguinea

Restrepia sanguinea

Restrepia seketii



Restrepia tabeae

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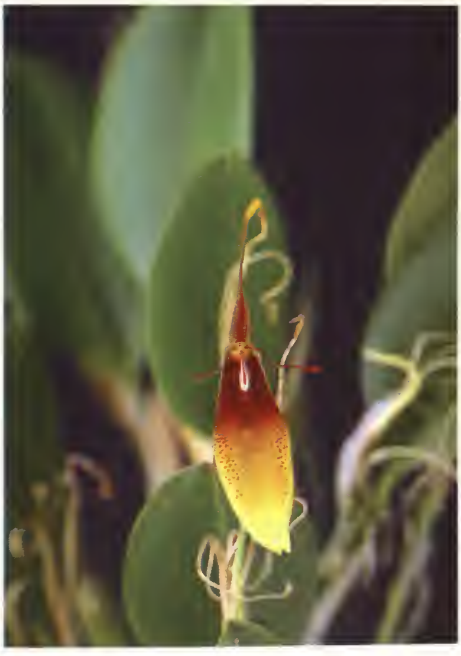
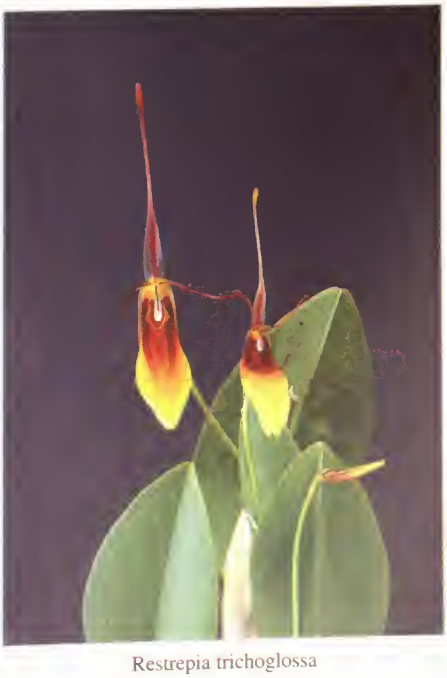


Restrepia trichoglossa

Restrepia trichoglossa

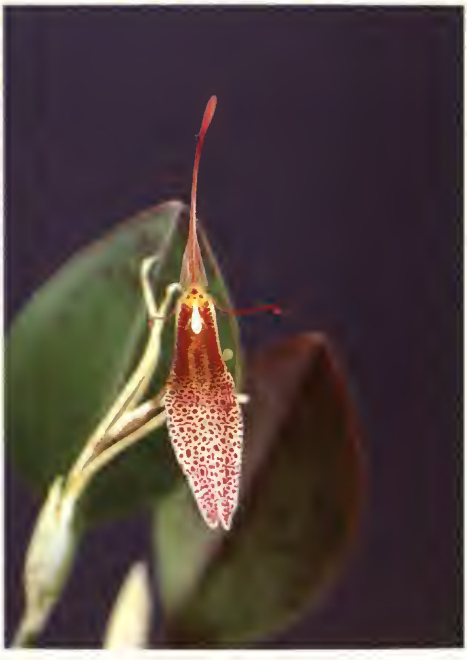
Restrepia trichoglossa



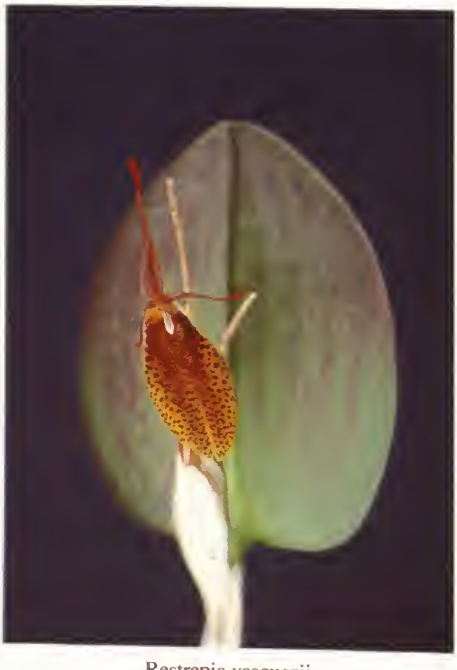
Restrepia trichoglossa

Color Plate 15.

Restrepia teaguei



Restrepia tsubotae



Restrepia vasquezii

Restrepia wageneri

Color Plate 16.

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